

# L'architecture à la lumière des notions de forme et d'information

# Architecture in Light of the Notions of Form and Information

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Université de Montréal

Pavillon de la Faculté de l'aménagement  
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## *Architecture in Light of the Notions of Form and Information*

« La notion de forme doit être remplacée par celle  
d'information »,  
Gilbert Simondon, *L'individuation à la lumière  
des notions de forme et information*, 1958 (2005).

Tant en français qu'en anglais, le terme information trouve ses racines dans le latin *informare* (*de in* 'dans' *plus forma* 'une forme'), signifiant 'donner forme', ou 'former une idée'. Le latin offre aussi *informatio*, signifiant 'concept' ou 'idée'. À l'origine employé pour indiquer la formation de l'esprit ou les techniques d'instruction, le terme information était en outre associé aux arguments de Platon, et plus tard d'Aristote, sur les formes idéales, ou idées (*eidos*), comme les représentations les plus exactes de la réalité et les seuls objets d'étude capable de générer des connaissances. Le grec ancien avait trois termes signifiant forme : *eidos*, 'image visuelle'; *morphé*, 'forme propre d'une chose', et *phainomenon*, 'apparence'. L'observation du caractère variable des apparences a conduit les philosophes grecs à examiner la relation entre substance (ou matière) et forme. Le débat s'est cristallisé dans la doctrine classique de l'hylémorphisme, formulée par Aristote, selon laquelle la matière est ce qui subit la transformation de la forme, c'est-à-dire la substance inerte sur laquelle la forme est imposée.

Présentement, le terme information est généralement compris et défini par les dictionnaires comme « étant une connaissance pouvant avoir un effet [...], cette connaissance doit être portée par un support et mise en présence d'une entité (un être humain ou un dispositif) et que cette entité fasse quelque chose à partir de cette information ». Ou bien, banalement, « des données traitées, sauvegardées et retransmises à un ordinateur. » Ou bien, finalement, « une quantité mathématique exprimant la probabilité d'occurrence d'une séquence particulière de symboles, d'impulsions, etc., par opposition à celle de séquences alternatives. En effet, l'information contenue dans un message composé d'une seule lettre se répétant un grand nombre de fois tel que « AAAAAAAAAA... » est quasiment nulle (on parle alors de faible néguentropie) ». De telles interprétations ont été annoncées, à la fin des années 1930 et dans les années 1940, dans le domaine des télécommunications et dans les laboratoires de recherche appliquée qui ont contribué à l'effort de guerre en développant des servomécanismes. Les théories et les technologies issues de ces domaines technoscientifiques convergeaient et donnaient simultanément naissance à la cybernétique et à la théorie de l'information.

Les méthodes et les concepts des deux disciplines ont trouvé des applications immédiates et convaincantes en biologie, en sociologie, en anthropologie, en psychologie, en linguistique et dans de nombreux autres domaines, notamment l'architecture et l'urbanisme, nous catapultant dans l'« ère de l'information ». Le philosophe français Gilbert Simondon dans *L'individuation à la lumière de notions de forme et information* (1958), offre une critique rigoureuse des théories de l'information avancées dans les cercles cybernétiques; il fut le premier à souligner comment la redéfinition du concept d'information nécessitait une remise en question fondamentale des idées classiques de l'être, de la connaissance, et par-dessus tout, des concepts de matière et de forme.

Aujourd'hui, à l'ère des mégadonnées, de l'intelligence artificielle, des machines d'impression 3D et des robots, confrontés à une quantité croissante d'informations à traiter et à archiver, de nouvelles générations d'architectes, de planificateurs et de concepteurs dans tous les domaines semblent questionner la relation entre la matière et la forme. Le séminaire Phyllis Lambert 2018 réunit des architectes, des philosophes, et des théoriciens des médias pour débattre des relations entre matière et information.

“The notion of form must be replaced by that of information”,  
Gilbert Simondon, *L'individuation à la lumière des notions de forme et d'information*,  
1958 (2005)

The word information, both in English and in French, finds its root in the Latin *informare* from in ‘into’ plus *forma* ‘a form’ meaning ‘to give form’, or ‘to form an idea of’. Originally employed to indicate the forming of the mind or teaching, the term information (Latin provides also *informatio*, signifying ‘concept’ or ‘idea’) was moreover associated to Plato’s, and later Aristotle’s, arguments about ideal forms, or ideas (*eidos*), as the most accurate representation of reality and the sole objects of study capable of generating knowledge. Ancient Greek had three terms signifying form: *eidos*, ‘visible form’; *morphē*, ‘shape’; and *phainomenon*, ‘appearance’. The observation of the variable character of appearances led Greek philosophers to examine the relation between substance, or matter, and form. The debate crystallized in the classical doctrine of hylomorphism, formulated by Aristotle, according to which matter is what undergoes transformation of form, in other words, inert substance on which form is imposed.

Currently the term information is generally understood and defined by dictionaries also as “what is conveyed or represented by a particular arrangement or sequence of things”; “data as processed, stored, or transmitted by a computer”; or, “a mathematical quantity expressing the probability of occurrence of a particular sequence of symbols, impulses, etc., as contrasted with that of alternative sequences”. Such present understandings were heralded, during the late 1930s and 1940s, in the area of telecommunication and in the applied research laboratories that contributed to the war effort developing servomechanisms. Theories and technologies from these techno-scientific fields converged and concurrently gave birth to Information theory and Cybernetics. Methods and concepts from both disciplines found immediate, convincing, applications in biology, sociology, anthropology, psychology, linguistics, and a host of other areas, including architecture and urbanism, catapulting us in our so-called “information age”. French philosopher Gilbert Simondon, in the

radical Individuation in the *Light of the Notions of Form and Information* (1958), a stringent critique of the theories of information advanced in cybernetic circles, was the first to emphasize how the redefinition(s) of the concept of information necessitated a fundamental rethinking of the classical ideas of being, knowledge, and above all, matter and form.

Today, in the age of “big data”, Artificial Intelligence, 3D printing machines, and robots, confronted with exponentially growing amount of information to be processed and archived, a new generation of architects, planners and designers in every field seem at least tentatively to be addressing and questioning the relation between matter and form. The present Phyllis Lambert International Seminar convenes philosophers, architects, and media theorists to debate on matter (in)formation.

**Alessandra Ponte** est professeure titulaire à l'École d'architecture de l'Université de Montréal. Elle a également enseigné à l'École d'architecture de l'Université de Princeton, à l'Université de Cornell, à l'Institut Pratt de Brooklyn, à l'ETH de Zurich, ainsi qu'à l'Institut Universitaire d'Architecture de Venise (IUAV). Elle a été professeure adjointe à l'École de design de l'environnement bâti et de l'ingénierie de l'Université de technologie de Queensland (Brisbane, Australie). Elle a enseigné des ateliers en collaboration avec l'AA School London et l'Université catholique de Santiago du Chili et des séminaires à l'Université du Costa Rica, et à l'École d'architecture de Alghero. Depuis 2008, elle est responsable de l'organisation et de la conception du Séminaire Phyllis Lambert, événement annuel (depuis 2016 biennuel) sur les thèmes du paysage et de l'architecture. Elle a aussi été commissaire de l'exposition *Environnement Total: Montréal 1965-1975* (Centre Canadien d'Architecture, Montréal, 2009). En outre, elle a collaboré (avec Laurent Stadler et Thomas Weaver) à la préparation de l'exposition et du catalogue *God & Co: François Dallegret, Beyond the Bubble* (Architectural Association School of Architecture, Londres, 2011; ETH, Zurich 2012, Paris-Malaquais, 2012, McMaster Museum of Art, Hamilton, Ontario, 2014). Elle a publié une collection d'essais sur les paysages extrêmes de l'Amérique du Nord intitulé, *The House of Light and Entropy* (London : AA Publications, 2014). Elle a collaboré aux projets pour le Pavillon canadien d'architecture de la Biennale de Venise en 2014, *Arctic Adaptations*, et en 2016, *Extraction*. De 2013 à 2016, elle a été membre du groupe de recherche *Future North* dans le cadre d'un partenariat entre l'École de paysage et d'urbanisme AHO (Oslo) et l'Institut de Barents. Depuis 2016, elle est membre du comité consultatif pour le « Bureau de l'urbanisation » (Graduate School of Design, Université de Harvard) dans le cadre du projet *Paysage comme urbanisme dans les Amériques* (Landscape as Urbanism in the Americas).

En 2014, 2015 et 2016, elle a mené, avec les étudiants de maîtrise de l'École d'architecture de l'Université de Montréal, des recherches sur les infrastructures et les établissements miniers de trois régions géologiques du Québec : la Fosse du Labrador (fer), la Faille de Cadillac (or, nickel et cuivre) et la région de Thetford Mines (amiante, granite, ardoise). Les conclusions de ces recherches ont déjà été partiellement publiées et seront le contenu d'un prochain livre intitulé *Matters of Extraction*.

Depuis le trimestre d'hiver 2017, en collaboration avec les étudiants de la maîtrise en architecture et des collaborateurs, elle a entamé une nouvelle recherche sur le thème « Architecture et information 2.0 ». Les recherches développées en 2017 ont été publiées dans un volume collectif sous le même titre. Actuellement, elle poursuit l'enquête architecture et information et se concentre sur l'impact du développement de la recherche en Intelligence Artificielle à Montréal. Les résultats seront publiés dans un volume édité à l'automne 2018.

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et d'information**  
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**MOT DE BIENVENUE / OPENING REMARKS**

**Jacques Lachapelle** | École d'architecture | Université de Montréal

**INTRODUCTION**

**Alessandra Ponte** | École d'architecture | Université de Montréal

**Première séance / First Session - 10h à 12h**

**10h-10h30 • Andrea Bardin** | Automation and Invention in Simondon's Theory of Information | Department of Social Sciences, Oxford Brookes University, Oxford

**10h30-11h • Emanuele Quinz** | Machines (architecturales) à comportements | Université Paris 8, EnsadLab, l'École nationale supérieure des Arts Décoratifs, Paris

**11h-11h30 • Orit Halpern** | The Planetary Test: Design, Computation, and the Management of Uncertainty | Department of Sociology and Anthropology, Concordia University, Montreal

*Modérateurs/ Respondents*

**Fabrizio Gallanti** | École d'architecture | Université de Montréal

**Irena Latek** | École d'architecture | Université de Montréal

**Table Ronde/Round Table • 11h30-12h**

**9h30 Amphithéâtre**



## Deuxième séance / Second Session - 13h15 à 16h

13h15-13h30 • Introduction

**13h30-14h • Nader Tehrani** | From composition to indexicality

| Cooper Union, Irwin S. Chanin School of Architecture, New York

**14h-14h30 • Kathy Velikov** | Embodying Information | Mediating

Environments | Materializing Response | Taubman College of Architecture and Urban Planning, University of Michigan, Ann Arbor

**14h30-15h • Gilles Retsin** | Bits and pieces: discrete architecture | The Bartlett School of Architecture, UCL, London

*Modérateurs/ Respondents*

**Samuel Bernier-Lavigne** | École d'architecture | Université Laval | Québec

**Salmaan Craig** | Peter Guo-hua Fu School of Architecture | McGill University | Montréal

Table Ronde/Round Table • 15h -15h30

Pause/Break • 15 minutes

## Troisième séance / Third Session - 16h à 18h

**16h-16h30 • Shannon Mattern** | Encrypted Repositories: Techniques of Secret Storage from Desks to Databases | School of Media Studies, The New School, New York

**16h30-17h • Dubravka Sekulic** | Norm (In)formation | IZK Institute for Contemporary Art, Graz Technical University, Graz

**17h -17h30 • Neeraj Bhatia** | Rendering Legible | California College for the Arts, San Francisco

*Modérateurs/ Respondents*

**Thomas Balaban** | École d'architecture | Université de Montréal

**Sinisha Brdar** | École de design, UQAM | Montréal

Table Ronde/Round Table • 17.30h -18h

Réception à 18h (salle 1150)



Première séance | *First Session*

10h à 12h

## Automation and Invention in Simondon's Theory of Information

Andrea Bardin

In *Individuation à la lumière des notions de forme et d'information* and *Du mode d'existence des objets techniques* Gilbert Simondon explicitly aims at 'reforming' the cybernetic concept of information, as well as the concept of machines à gouverner.

A concept of information as the emergence of invention is elaborated by Simondon in order to challenge the substantialism and teleology implicit in the Aristotelian concept of form, in the 'good form' of Gestalttheorie, and in Wiener's concept of information as negentropy. Simondon's reform of the concept of information appears closer to Shannon's understanding of the 'production' of information. The concept of information, however, has also a qualitative 'onto-epistemological' dimension for Simondon; it describes the entanglement of matter and knowledge he names 'ontogenesis' or 'individuation'. Simondon's critique of cybernetics reflects his more general ontological, epistemological and political critique of modernity.

The same substantialist/determinist ontology and deductive epistemology run, according to Simondon, through the modern 'episteme' of political theory from Hobbes's body politic to the cybernetic social automaton, grounding the idea of government as the production and organisation of political order and stability. Although Simondon shares Wiener's understanding of systems in terms of information exchange with the environment, he refuses to conceive them as defined by negative feedback and homeostasis. On the contrary, Simondon conceives all systems in terms of 'metastability'. This allows him to prioritise openness, partial indeterminacy, and the emergence or 'invention' of ethical and political goals, rather than equilibrium and automation. Hence, Simondon's political pedagogical project is aimed at the circulation of 'open' technosymbolic objects in order to develop 'technical mentality' and trigger normative invention in social systems.

**Bio**

Andrea Bardin is Lecturer in Politics at Oxford Brookes University (UK). He studied Political Theory and History of Political Thought at the University of Padua (Italy) and Brunel University London (UK). He is a founding member of the *Centre international des études simondoniennes* (MSH Paris Nord), and the author of many articles and a book on Simondon: “Epistemology and Politics in Gilbert Simondon: Individuation, Technics, Social Systems” (Springer). His work focuses on the relationship between epistemology and political thought from early modernity to the present. In particular, he is interested in a critique of the ideological function of natural scientific models conceived as ontological and epistemological foundations in political and social theory.

## Machines (architecturales) à comportements

Emanuele Quinz

Comme l'explique Ross Ashby, « la cybernétique ne traite pas de choses, mais de comportements ». Comportements envisagés dans une perspective à la fois fonctionnelle et relationnelle - comme échanges entre des acteurs en interaction, dans l'espace et dans le temps, mais aussi comme des actes de communication, dans un système basé sur l'information.

En se fondant comme science de l'organisation et du contrôle, la cybernétique procède par une modélisation des comportements : non pas une sémantique, mais une grammaire, non pas une ontologie, mais une ontogenèse.

Parmi les premiers, Nicholas Negroponte et l'Architecture Machine Group aux États-Unis et Gordon Pask en Grande-Bretagne se saisissent de la pensée cybernétique et de ces « machines intelligentes », en empruntant leur capacité de modélisation, d'adaptation, et de simulation, avec l'objectif de refonder l'architecture comme une pratique dynamique et participative. Comme

l'affirme Negroponte, « intelligence is behavior », et le comportement est, en même temps, saisie, gestion prédictive de l'information et tension morphogénétique.

À partir de l'analyse de deux projets exemplaires comme *Seek* de Negroponte et *Generator* de Cedric Price, la présentation explorera la pertinence de la notion d'*Objet à comportement* dans le domaine de l'architecture, à la fois dans sa perspective historique et actuelle.

## **Bio**

Emanuele Quinz, Historien de l'art et du design et commissaire d'exposition. Maître de conférences à l'Université Paris 8 et enseignant-chercheur associé à l'EnsadLab, Ecole Nationale Supérieure des Arts décoratifs, dans le cadre du programme de recherche *Reflective Interaction*. Ses recherches explorent les convergences entre les disciplines dans les pratiques artistiques contemporaines : des arts plastiques à la musique, de la danse au design.

Il est l'auteur de *Le cercle invisible. Environnements, systèmes, dispositifs* (Les presses du réel, 2017) et il a dirigé ou codirigé plusieurs ouvrages dont *Strange Design* (avec J. Dautrey, éditions it., 2014), *Esthétique des systèmes* (Les presses du réel, 2015), *Behavioral Objects I* (avec S. Bianchini, Sternberg 2016), *Uchronia* (avec F. Apert et A. Vigier, Sternberg 2017). Depuis 2012, il coordonne, avec Samuel Bianchini, le projet de recherche Behaviors. *Objets à comportement entre art, science et design*, en partenariat avec l'Ensad et le MNAM/Centre Georges-Pompidou.

## **The Planetary Test: Design, Computation, and the Management of Uncertainty**

**Orit Halpern**

In 1943, in the midst of the war, the famous architect Richard Neutra was commissioned by the government of Puerto Rico to build hospitals and schools. In response, he produced a number of prototypes and processes investigating different ways to ventilate and climate control buildings in the sub-tropical environment of the island. His prime concern was to improve social condition with limited capital outlay through the use of technology and better metrics. Neutra famously labeled his work in Puerto Rico a “Planetary Test”.

I want to use this moment when the planet itself becomes a test through new forms of measurement, design, and technology to begin contemplating our contemporary smart cities and infrastructures.

A test however is not a simulation. The “planetary test” that has now become our habitat is not representation of, and does not predict, stable set outcomes. Rather, the forms of testing—stress testing in finance, derivative pricing, a/b testing in

software development and machine learning, and demoing, prototyping, and versioning in architecture and urban design, are ways of inhabiting disastrous conditions and managing uncertainty without endpoint. No longer linked to calculatable endpoints, and answering to “wicked” problems, we have now developed new modes of practice that defer the end in the name of constant forms of derivation and speculation that manage time through new performative algorithmic and design technologies.

I argue that this form of demoing and testing has now become the central vision in design, planning, and engineering for managing human (and planetary) life in an age of real and imagined terran scale disasters. Neutra’s “planetary test” has now become a global infrastructure of “smart” test-bed zones and infrastructures, a global network of computational infrastructures, that colonize space and life and manage the future through constant



swapping, deriving, and testing that allow high risk design practices such as real-estate construction in climate change threatened spaces, the design of unsustainable energy infrastructures, and constantly volatile and insecure internet networks. This talk will trace several case study histories of “planetary tests” bridging from “smart” cities to machine learning systems in finance and reinsurance industries to ask about

the nature of experiment, habitat, and computation that make our planet a test for calculative and computational technologies.

### **Bio**

Dr. Orit Halpern is an Associate Professor in the Department of Sociology and Anthropology at Concordia University. Her work bridges the histories of science, computing, and cybernetics with design and art practice. She is also the director of the *Speculative Life Research Cluster*, a laboratory situated at the intersection of the environmental sciences, architecture and design, and computational media. You can find out more at: [www.orithalpern.net](http://www.orithalpern.net) [www.speculativelife.com](http://www.speculativelife.com) [www.planetaryfutures.net](http://www.planetaryfutures.net)

## Modérateurs/ Respondents

### Fabrizio Gallanti

has wide-ranging and international experience in architectural design, education, publication, and exhibitions. He holds a Ph.D. in architectural design from the Politecnico di Torino (Turin, Italy 2001) and a M. Arch. from the University of Genova (1995). Together with Francisca Insulza, he is the founding member of the design and research studio FIG Projects, currently based in Montreal. He has taught in Canada, Chile, Italy, UK and USA. Between 2007 and 2011, he was architecture editor at *Abitare* magazine and chief editor of *Abitare* website. Between 2011 and 2014, he was the Associate Director Programs at the Canadian Centre of Architecture in Montréal, Canada. In 2014, he was the first senior Mellon fellow at the School of Architecture of Princeton University. He is a regular contributor to magazines such as *Abitare*, *Interwoven* and *San Rocco*. He currently teaches at the School of Architecture of McGill University, Université de Montréal and the Architectural Association in London.

### Irena Latek

architecte et artiste canadienne, est professeure à l'École d'architecture de l'Université de Montréal et elle y dirige le laboratoire de recherche-crédation «medialabAU». Elle est architecte diplômée de l'École polytechnique de Varsovie. Directrice de l'Institut de recherche en histoire de l'architecture (Centre canadien d'architecture, Université de Montréal et Université McGill) de 1997 à 2000, elle y a dirigé la publication *Peter Collins et l'histoire critique de l'architecture moderne* (IRHA, 2002). Elle est aussi membre fondateur de l'Institut Art Culture Technologie (IACT) de l'Université de Montréal. Irena Latek situe ses recherches à la jonction de l'architecture et des arts numériques. Les projets qu'elle a réalisés avec l'équipe «medialabAU» en vidéo ou au moyen d'interfaces interactives prennent la forme d'installations questionnant les urbanités contemporaines. Elle a développé le « collage mouvant », une méthode originale de la conception de l'architecture et de l'interprétation de l'espace à travers la vidéo. Son travail a été exposé au Canada, en Espagne, en Allemagne et en France ; elle a notamment présenté des expositions monographiques : *Intervallés*, Montréal, Cinémathèque québécoise, 2015-2016, *Flux*, Montréal, Centre d'exposition, UdeM, 2015, *Trans-porteurs Ecotopia –Utopia*, Montréal, Centre d'exposition, UdeM, 2009, *Ubiquités publiques Desynchronized Public Spaces*, Montréal, SAT, 2005, *Espaces mouvants Soft Public Spaces*, Montréal, SAT, 2003 et Barcelone, Galerie Ras. 2004.

Deuxième séance | *Second Session*

13h15 à 16h

## From composition to indexicality

Nader Tehrani

The vicissitudes of representation stand out as the seminal platform on which architecture has found its conceptual voice. In part, the emergence of the architectural discipline is rooted in the invention of drawing types as the threshold between the imagination and the built world. In turn, the instrumentality of these drawings is such that they have allowed for certain visions in accordance with the peculiarities of the medium in which they are exercised: it would be challenging to think of Holbein's *The Ambassadors* anamorphic moment without a profound appreciation of the technical, conceptual and symbolic role of conical projection as a perspectival tool, producing depth in a surface that has none.

A catalogue of drawings from the caves in Lascaux to Hadid's paintings of *The Peak*, all share one thing, no matter what medium in which they are conceived. Graphite, charcoal, ink, lead, paint and a range of other media all have varied material agencies while bringing to the foreground the centrality of the composition in

the visual medium. The canons of composition have also certainly been challenged by certain artists. Consider the action paintings of Jackson Pollock, or the instruction based art of Sol LeWitt, both of them placing the methodological prescriptions as a conceptual prerequisite to the art work itself. Despite these heretical forays into a critical encounter with composition, the process that their work engenders remains visual in its fundamental protocols: you see what you draw.

Connecting Pollock or LeWitt to Lascaux some 17,000 years prior sets up a time span that is brought to a fundamental paradigmatic shift when the protocols of information precede the emergence of form. That is, the medium of information—whether a mathematical equation, an algorithm, a written code, or a systemic prescription in Grasshopper—all entail a form of manifesting themselves that is non-visual in their first instance. Each entail an initial moment of alienation, when the information of the 'score' entails a language that is does not, and cannot compositionally

emulate the conditions it wishes to unleash. To be clear, forms are produced, spaces do emerge, and even materials get specified, but they maintain an indexical relationship to the conditions of their inception. By analogy, the thumbprint and the barcode share the common trait that the content each imparts may relate to the identity of an individual; however, whereas the thumbprint involves a direct visual composition to the body part whose markings are

uniquely individual, the barcode bears absolutely no connection to the thumb itself—it only contains an indexical link to the human body, and in effect could even contain compositional information, but that emerges only in the second instance.

My presentation will focus on the formal, spatial and material predicaments that are faced when the age of information casts its shadow on the architectural project.

## **Bio**

Nader Tehrani is the Dean of the Irwin S. Chanin School of Architecture at the Cooper Union in New York. Nader Tehrani is also Principal of NADAAA, a practice dedicated to the advancement of design innovation, interdisciplinary collaboration, and an intensive dialogue with the construction industry. He was previously a professor of architecture at MIT, where he served as Head of the Department from 2010-2014.

Tehrani's work has been recognized with notable awards, including the Cooper Hewitt National Design Award in Architecture (2007), the United States Artists Fellowship in Architecture and Design (2007), and the American Academy of Arts and Letters Award in Architecture (2002). He has also received the Harleston Parker Award for the Northeastern University Multi-faith Spiritual Center (2002) and the Hobson Award for the Georgia Institute of Technology Hinman Research Building (2012). He was the William A. Bernoudy Architect in Residence at the American Academy in Rome in 2017/2018. Throughout his career, Tehrani has received eighteen Progressive Architecture Awards as well as numerous AIA, BSA and ID awards. For the past five years in a row NADAAA has placed in the top three design firms in the U.S. in Architect Magazine's Top 50 Design ranking.

## Embodying Information | Mediating Environments | Materializing Response

Kathy Velikov

Over twenty years ago Manuel Castells wrote that one of the characteristics of the emerging information technology paradigm is that information is now raw material. No longer only an input for other technologies, but a thing in itself. For design, this is producing a number of implications. Currently, for almost every physical object designed there is a digital model, an information-based self, or moreover *selves*, as objects proliferate into multiple data-based existences. The natural world, a longtime reference for architectural form, has shifted from being primarily a visual model to an abstract one, informing architectures that aspire toward structural optimization, performative material composition, and behavior-based adaptation. Growth, genetic, and learning algorithms are used to evolve designs rather than conceive them through deductive logics. Other abstract models, such as climate or environmental ones, are increasingly integrated to provide feedback on the shape and performance of built forms. Live data feeds, from the environment

to humans and nonhumans, are enabling architectures that respond and adapt to extrinsic dynamics in real-time; designers are experimenting with architectural materials, geometries, and technologies that both physically allow this to happen, and that shape relations and exchanges. The rapid development of computationally controlled fabrication is expanding the range of architectural materials and assemblies that are possible and design has entered an experimental phase of prototyping novel material compositions, manufacturing and assembly processes without the attachment to entire building designs. This presentation will use these ideas to situate a series of projects undertaken through rvtr's research practice. The work has focused on the reconception of the *envelope*, the boundary between environmental domains, as a site of innovation for responsive, kinetic, and climate conscious architecture, and that has been developed through the reciprocities between form, matter, energies, and information.

**Bio**

Kathy Velikov is an Architect, Associate Professor at the University of Michigan Taubman College of Architecture and Urban Planning, and the current president of ACADIA. She is founding partner of the research-based practice rvtr, which serves as a platform for exploration and experimentation in the agency of architecture and urban design within the context of dynamic ecological systems, infrastructures, materially and technologically mediated environments, and emerging social organizations. Her work ranges in scale from regional territories and urbanities to full-scale installation-based prototypes that explore responsive and kinetic envelopes that mediate energy, atmosphere, and interaction. Kathy is a recipient of the Architectural League's Young Architects Award, the Canadian Professional Prix de Rome in Architecture, and co-author of the book *Infra Eco Logi Urbanism* (2015). Her work and writing has been published in *TAD*, *AD*, *Footprint*, *JAE*, *IJAC*, *Leonardo*, *New Geographies*, *eVolo*, *Volume*, *[bracket] Goes Soft*, and *MONU*, as well as in the books *Towards a Robotic Architecture*, *Third Coast Atlas*, *Infrastructure Space*, *Hypernatural*, *Paradigms in Computing*, *Performative Materials in Architecture*, and *High Performance Homes*. She is co-curator of the traveling exhibition "*Ambiguous Territory: Architecture, Landscape and the Postnatural*" and co-editor of an upcoming book.

## **Bits and pieces: discrete architecture**

**Gilles Retsin**

This talk presents a body of work and thinking that is based on a computational understanding of the discrete part or bit – pieces that are as scalable, accessible and versatile as digital data. Gilles Retsin's work proposes that a digital form of assembly, based on parts, contains the greatest promise for a complex, open-ended, adaptable architecture. This approach capitalises on the digital economy and automation, with the potential of the digital to democratise production and increase access. The work suggests that the digital not only has deep consequences for how we design and produce architecture, but also that it is first and foremost a new system of production with economic, social and political consequences that need to be understood - such as the global housing crisis and the impact of accelerated automation on labour.



**Bio**

Gilles Retsin is a London based architect and designer whose work is interested in the impact of computation on the core principles of architecture – the bones rather than the skin. His practice works internationally and has developed numerous provocative proposals for buildings on a range of scales. His work has been acquired by the Centre Pompidou in Paris, and he has exhibited internationally in museums such as the Museum of Art and Design in New York among others. He is Program Director of the B.Pro Architectural Design (AD) M.Arch course at the Bartlett School of Architecture in London. Gilles Retsin studied in Belgium, Chile and the UK, where he obtained a master from the Architectural Association's in London. Prior to founding his own practice, he worked in Switzerland as an architect with Christian Kerez.

## **Modérateurs/ Respondents**

### **Samuel Bernier-Lavigne**

est professeur agrégé à l'École d'architecture de l'Université Laval, et fondateur / directeur du FabLab ÉAUL. Il a reçu un doctorat en architecture (théorie, conception et fabrication numérique) (2014), en plus d'être récipiendaire de l'*Henry Adams Medal of Honor* (AIA), de la médaille de l'Institut Royal d'Architecture du Canada (IRAC), de la Bourse du Collège des Présidents (OAQ) et d'une bourse d'études supérieures du Canada Alexander-Graham-Bell (CRSNG). Samuel a notamment travaillé pour Studio Cmmnwlth (New York), Gramazio & Kohler (ETH, Zurich), et enfin UNStudio (Amsterdam), sur de nombreux projets allant de l'échelle de l'objet à celle de l'urbain. Il a aussi effectué une résidence doctorale à l'École Nationale Supérieure d'Architecture de Lyon en plus d'être diplômé de l'Architectural Association Visiting School Los Angeles. Ses recherches financées portent sur le développement des nouvelles technologies en architecture et la question de la haute-résolution. Il collabore avec plusieurs firmes d'architecture, notamment par le biais de concours. Il a été commissaire de l'exposition «Les Chambres blanches», de l'atelier Pierre Thibault au Jardin de Métis en 2015 et professeur responsable des installations architecturales du premier MNBAQ Gala en collaboration avec Shohei Shigematsu (OMA) en 2018. [samberlav.com]

### **Salmaan Craig**

is an Assistant Professor in the School of Architecture at McGill University in Canada. He grew up in London, England, and studied product design as an undergraduate and environmental technology for his doctorate, both at Brunel University. His research and pedagogy focus on the design of materials and the use of ambient energy for thermoregulation and their connections to broader concerns of architecture, technology, and ecology. Before McGill, he spent four years at the Harvard Graduate School of Design lecturing in architectural technology, three years at Foster + Partners consulting on environmental design, and two years at Buro Happold consulting on envelope design. Some of the projects he contributed to in practice include Bloomberg London, Apple Park, the Masdar Institute, and the Louvre Abu Dhabi.

Troisième séance | *Third Session*

16h à 18h

## Encrypted Repositories: Techniques of Secret Storage from Desks to Databases

Shannon Mattern

Ours is an age of leaks and hacks, of doxing and public shaming. Yet we are not alone in our fascination with security and secrecy (or the lack thereof). Many historians have described the 18th century as an age of secrets – of espionage and secret societies, of new forms of private writing and sartorial features allowing for the confidential carriage of objects. This desire for discretion also informed, and was informed by, new modes of organizing space. In this paper I'll examine how 18th-century techniques in cabinetry and lock-making generated furnishings that served as encryption devices requiring specialized knowledge for their operation, and cultivating new techniques of secrecy among their users. Covert compartments and false bottoms – taken to their extreme in the nested designs of German furnituremakers Abraham and David Roentgen – facilitated the clandestine storage of private documents, personal letters, and treasured objects. These furtive furnishings then evolved into the intricately pigeonholed and slotted

equipment of the 19th-century office, like the Wooton Desk and the filing cabinet, both securing informational architectures and bureaucratic logics behind lock and key. Our eventual transition to digital desktops then necessitated new forms of security and secrecy – lockboxes, keys, and encryption techniques – that take cues from their forebears in analog security. And today, as we move beyond the graphical user interface, past skeuomorphic representations of sturdy cabinets and locked files, we're developing new techniques of secrecy – some harkening back to the days of paperwork-based paranoia and oral espionage. This paper maps out these interlocking histories of technique: techniques of secrecy, information management, furniture making, security engineering, and encryption.

**Bio**

Shannon Mattern is Professor of Media Studies at The New School. Her writing and teaching focus on archives, libraries, and other media spaces; media infrastructures; spatial epistemologies; and mediated sensation and exhibition. She is the author of *The New Downtown Library: Designing with Communities*; *Deep Mapping the Media City*; and *Code and Clay, Data and Dirt*, all published by University of Minnesota Press. She contributes a regular long-form column about urban data and mediated infrastructures to *Places*, a journal focusing on architecture, urbanism, and landscape, and she collaborates on public design and interactive projects and exhibitions. You can find out more at [wordsinspace.net](http://wordsinspace.net).

## **Norm (In)formation**

**Dubravka Sekulić**

Informality, especially in space, is often understood as an error, aberration, spontaneous (spatial) formation which marks absence of rules, and, above everything, a problem that needs to be fixed. When not considered a problem, it is celebrated for a resilience and resourcefulness, yet still treated as a black box. In my presentation, I will treat informality as a source of information and what it can tell about space, both as a material condition and immaterial institutional formation. The information sourced by the close reading of the “Russian Pavilion” neighbourhood in Belgrade, will be used to connect the changes in the legal and property framework with the spatial changes that occurred. In the second part of my presentation, the analysis will be used as a base for a discussion about the possible field of intervention that opens by considering the dialectical relation that exists between the spatial information and the institutional formation.

**Bio**

Dubravka Sekulić is an architect researching transformations of contemporary cities, at the nexus between production of space, laws and economy. She is an assistant professor at the IZK - Institute for Contemporary Art, Faculty of Architecture, TU Graz and a PhD fellow at the Institute for History and Theory of Architecture, Department of Architecture, ETH Zürich. She wrote *Glottz Nicht so Romantisch! On Extralegal Space in Belgrade* (jan van eyck, 2012), *Constructing Non-alignment: The Case of Energoprojekt* (msub, 2016), and co-edited, together with Žiga Testen and Gal Kirn *Surfing the Black : Yugoslav black wave cinema and its transgressive moments* (jan van eyck, 2012), as well as *Peti Park - Struggle for Everyday* (Kontekst, 2012) together with Marko Miletic, Branko Belacevic, Jelena Stefanovic and Srdjan Prodanovic. She was a fellow at the Akademie Schloss Solitude, Stuttgart and Jan Van Eyck Akademie, Maastricht. She was a founding member of the Parity Group at the Department of Architecture, ETH Zürich. She is an amateur-librarian at Public Library/ Memory of the World, where she maintains feminist, and space/race collections.

## Rendering Legible

Neeraj Bhatia

The increasingly interconnected globe and the relationship between systems-both natural and artificial-across scales, has implicated territorial systems-ecological, economic, social, and political systems, amongst others-into the domain of spatial design. The associated regional economic alliances associated with globalization (for instance, the EU, ASEAN, NAFTA, etc.) have suggested that boundaries are increasingly more permeable, temporal, and non-spatially defined. The ever-expansionist mechanisms of capitalism have created new relationships that are both comprehensively integrated while also blurring and making more complex the standard definition of territory. If territoriality describes how individuals or groups claim space-revealing how power manifests itself in geographic space - today, within the endless carpet of urbanization, boundaries (national amongst others) are reduced in significance, making it more difficult to pinpoint how power manifests itself geographically. While architecture is always political-in that, it reifies

through a negotiation of economics and socio-cultural interests-its ability to assert a political voice onto these systems is in question. The difficulty with design today not only resides in the quantity of information to be processed, but more importantly how this information is typically normalized through form, thereby making the complex (and inequitable) power relations acceptable and non-visible. This act of normalizing the difficult tensions of society renders the intricacies of the systems by which we live abstract, and thereby difficult to act on. This lecture will explore the possibilities of a renewed legibility in architecture to assert a political framework by which to understand the territory and systems of power that govern it. Utilizing a series of recent design projects by *The Open Workshop*, the lecture will explore how the legibility of form can render the information of urbanization visible - acting as the first step in confronting our relationship to power.



## **Bio**

Neeraj Bhatia is a licensed architect and urban designer from Toronto, Canada. His work resides at the intersection of politics, infrastructure, and urbanism. He is an Associate Professor at the California College of the Arts where he also co-directs the urbanism research lab, The Urban Works Agency. In 2018, he was named the Esherick Visiting Professor at UC Berkeley. Prior to CCA, Bhatia held teaching positions at Cornell University, Rice University, and the University of Toronto. Neeraj is founder of *The Open Workshop*, a transcalar design-research office examining the negotiation between architecture and its territorial environment. In 2016, The Open Workshop was awarded the Architectural League Young Architects Prize. Select other distinctions include the Emerging Leaders Award from Design Intelligence, Graham Foundation Grants, The Lawrence B. Anderson Award, Shell Center for Sustainability Grant, Odebrecht first-prize Award for Sustainability, ACSA Faculty Design Award, ACSA Housing Education Award, and the Fulbright Fellowship. He is co-editor of books *Bracket [Takes Action]*, *The Petropolis of Tomorrow*, *Bracket [Goes Soft]*, *Arium: Weather + Architecture*, and co-author of Pamphlet *Architecture 30: Coupling — Strategies for Infrastructural Opportunism*. Neeraj has a Master degree in Architecture and Urbanism from MIT and a Bachelor of Environmental Studies and Bachelor of Architecture from the University of Waterloo.

## **Modérateurs/ Respondents**

### **Tom Balaban**

OAQ AAPPQ MRAIC est architecte et professeur. Il est diplômé de l'École d'architecture de l'Université McGill. De 2006 à 2012, il a enseigné à l'École d'architecture de l'Université McGill. Depuis 2012, il est professeur à l'École d'architecture de l'Université de Montréal. Il a travaillé pendant plusieurs années au sein du bureau de Frank O. Gehry à Los Angeles ainsi que pour Saucier+Perrotte à Montréal.

### **Sinisha Brdar**

est architecte et professeur à l'École de design de l'UQAM à Montréal. Il a précédemment enseigné à l'Université de Montréal et à McGill. Sinisha est diplômé de l'Université de Montréal et de Harvard GSD où il a étudié avec l'appui de la bourse Fulbright. Il a travaillé au sein de nombreuses agences d'architecture au Canada et à l'international, dont OMA, Maccleanor Lavington, Daoust Lestage, NIP paysage et EKIP. Explorant les synergies entre la politique et l'urbanisme, ses recherches actuelles portent sur la notion de catalyseur urbain et le paradigme émergent de l'urbanisme léger.

## ÉQUIPE

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Le Séminaire Phyllis Lambert aura lieu / The Phyllis Lambert Seminar will be held at:  
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