

BIOINTERFACIAL DESIGN

Post-parametric Architectural, Aesthetical and Sociopolitical Configurations

by Mina Yaney

In considering how materiality has been fabricated and deployed throughout modern technoscience, one observes an underlying operating deterministic-analytical anthropocentrism bending nature according to human's intentional will. Variants on such a claim are reminiscent of Heidegger's critique of modern technology, in the seventies, where he describes the essence of modern technology as *Enframing*, [*Ge-stell*], which transforms the world into an instrumental "standing-reserve". Hence, organic materiality has been conceived of as passive, inert, and therefore subject to intentional configuration and organization into desired ends, such as products, objects, and habitable structures. Perhaps the imagery of the Vitruvian Man and of the concomitant model of the machine, as modern guiding metaphors for the production of built environments, depicts how the modern project has been distinctly based on a cognitive approach to materiality.

However, the history of British cybernetics offers a different conception of materiality as well as a concomitant form of technology and science that attempted to generate propositions to circumvent a modern domination of nature through knowledge while incorporating the *morphogenetic and adaptive intelligence* of embodied matter.

The projects of Britain's leading cyberneticians, Gordon Pask and Stafford Beer, as well as their approach of what one may call embodied or biological computation, are most indicative of such cybernetic approach to materiality. The paper critically investigates the interrelation of materiality, information, interactivity, and interfaciality in the case of Pask's notion of chemical computers while characterizing his approach as generating quasi-organic electrochemical interfaces.

Subsequently the paper attempts to expand the Paskian conception of electrochemical interfaces by the introduction and evaluation of the notion of *metabolic biotechnical interfaces*. This introduction seeks to expand on the interfacial (and nondual) opportunities provided by recent developments in biotechnology as potential source of technology, methodological, theoretical, and material transfer. The paper concludes with speculations on how architectural design might, thereby, be rethought as *biotechnical interface between intentionally-dependent and intentionally-independent systems* while inducing organic habitable structures from within – via modulation and interfacing - rather than mechanically and intentionally imposing rigid form from without.

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Abstracts and Presenters' Biographical Notes

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Spatial Relations and Materialist Ethics

In 1913 the Catholic theologian Max Scheler published his first major volume on *materiale Wertethik*, or materialist value-ethics. It would prove to be a germinal book in the development of phenomenology. The central idea of materialist ethics is that affects (including feelings, emotions and moods) have an inherent ethical meaning. How we feel about material events, things and spaces is not derived from abstract reflective judgment, nor do feelings impoverish our judgments, rather, they are the absolute basis for the possibility of judgment as such. Scheler thereby granted immediate ethical importance not only to the affects produced by spatial relations and sensual materialism, but opened the possibility for meaningful discussions of the transformation of our experience of space through mood, a discussion obliquely reflected in the bizarre sets of German expressionist cinema.

In 1927 the marxist designer El Lissitzky produced a series of photomontages that conveyed emotional states solely through their titles and the spatial relations embodied in the image. *Eifersucht*, or Jealousy, shows a figure occupying his own skin like a homunculus, his real body alienated from him and projected onto an imaginary third party who occupies the space next to the woman of his desire. The imaginary third party, an inversion of his own self, is both a paranoid projection and a barrier whose imaginary status is underscored by the apparent obliviousness of the modern woman who is both the largest figure in the picture, and spatially subordinated to the plague of phantasies that surround her. In Lissitzky, a particular emotion can not only be depicted through the spatial arrangement of elements, but perceived spatial relations show themselves to be a direct product of affectual states.

Heidegger praised Scheler as "the strongest philosophical force in modern Germany" in 1928, and Karol Wojtyła, later Pope John Paul II, wrote his doctoral thesis on Scheler's work in 1954. In between those two dates, Scheler's work was suppressed by the National Socialist government, and alternately neglected and appropriated, not least by Heidegger himself. Lissitzky, for his part, has suffered less posthumous neglect, but the relationship between affect and spatiality in his montages has never been properly addressed. This paper proposes an exploration of materialist ethics through the spatial depiction of affect in Lissitzky's photomontages. This unlikely combination of catholic and marxist thought presents a kind of counterfactual history of materialism and spatiality that takes elements from (but is not directly derived from) the central tradition of phenomenology as it evolved in the twentieth century.

Dr Adam Jasper is a contributing editor to *Cabinet*, and a regular contributor to *Frieze* and *Art & Australia*. For these publications he has written on art criticism, material culture and the anthropology of the banal. He is also a lecturer on the Faculty of Design, Architecture and Building, University of Technology Sydney. He teaches subjects on aesthetics, art history and criticism within the faculty. His most recent article is a case study on the sequence of events via which an obscure biological entity (in this case a microscopic fungus) can become a significant geopolitical player. "What Is *Fusarium*?" was published in *Cabinet*, Issue 46 "Punishment" (Summer 2012). He also contributed an essay on Giacometti and fetishism to the publication of "The Golden Thread", the book accompanying Hany Armaniou's pavilion at the 2011 Venice Biennale.

Amy Campos
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"Material Waste: Considering Designed Obsolescence and Excess as a Way Out"

Much attention in the last few years has been focused on environmental change, material waste, economic disparity, and the rapid migration of industry. Planned obsolescence, disposability, biodegradation and similar progressive material processes can provide a new model for reconciling cultural desires for more with a sustainable mandate for less. Rather than viewing the design of the built environment as means to a single, complete "finished product", transformative material processes can be applied as opportunistic and systematic strategies for designed environments that can productively evolve over time.

There is an abundance of underutilized built space in the world today, particularly in areas with shifting industrial and economic resources. As buildings in these areas are abandoned, recyclable materials are stripped from them leaving the bulk of the building material left unprotected and exposed to accelerated decay. Ultimately, the ability to recycle proportionately small amounts of the building material renders a large portion of the material unusable again, producing a huge amount of unnecessary waste. Because we design for a building's durability in terms of total assembly, we overlook opportunities to think of the built environment in terms of replaceable assemblies of varying durabilities.

One useful model for a component-based way of designing is found with the widespread use of paper collars, cuffs and shirtfronts in men's fashion in the mid-19th century. The restructuring of the shirt to provide for single disposable components lengthened the life of the body of the shirt and allowed for durability to adjust according to the use patterns inherent in particular areas of the shirt structure. By acknowledging a variation of needs for durability in this case and making something strategically and variably disposable, overall durability and functionality were extended with minimal waste.

This presentation will examine new modes of material and spatial assembly in the built environment that embrace obsolescence, disposability and biodegradability and design for varying permanence in built environments that can accommodate modern migrations of industry, capital and population.

Amy Campos is a practicing architect and designer, and is an assistant professor in Interior Design, Architecture and Visual & Critical Studies at California College of the Arts in San Francisco, CA. Her work focuses on critical issues of durability and design with an emphasis on full-scale installation and fabrication. The work spans a variety of scales and platforms from urban to architectural and interiors to object and furniture design. Campos is a registered architect and is LEED accredited. She received her Master of Science in Advanced Architectural Design from Columbia University and a Bachelor of Architecture from Cal Poly, San Luis Obispo.

Andrea Connor
University of Technology Sydney

Faith in Steel: The Fragmented Afterlife of the World Trade Centre, Mediating Modernity after 9/11.

From its earliest inception the skyscraper has worked as a powerful symbolic agent and material loci around and through which to mediate the dreams and utopian visions associated with modernity. Skyscrapers embody the promise of technology and what the architect Rem Koolhaas famously referred to as the dream of “free movement in space.” In this paper I consider the ongoing mediating agency of one such skyscraper, the World Trade Centre (WTC), through the trajectory of its remnants, the steel beams that once formed the internal, structural skeleton of the buildings.

One of the most recyclable commodities in the world, the strength and malleability of mass-produced, industrial strength steel is as elemental to a form of modern, industrial capitalism, and the development of the very tall building as money. But steel is not only a physical commodity it is also a cultural substance, a material imbued with wider social meanings and historical residues including: the idealized cultural values associated with modernity—a ‘spirit’ exemplified by the skyscraper; its general association with ‘building’ and by extension its metaphoric and imaginative association with nation-building; its identification with a form of robust, entrepreneurial capitalism, characteristic of the 20th century, and iconic industrialists like J.P. Morgan and Andrew Carnegie, who got their start in steel; and its popular cultural associations in characters like Superman – ‘the man of steel,’ defender of the urban, American, metropolis.

These historical and cultural residues have been made visible since 9/11, through the circulation and deployment of WTC steel in new highly symbolic contexts. In this paper I trace the emergence of steel as a privileged agent of mediation, in a context of heightened vulnerability post-9/11 and its transformation as sculptural memorials, sacred relics and artifacts in the social space of a number of commemorative environments. I aim to understand not only its physical transformations but also how the *cultural materiality* associated with a modernist skyscraper has been preserved, re-animated and put to work through these durable steel fragments.

Andrea Connor currently teaches Researching Design History in the faculty of Design, Building and Architecture at the University of Technology in Sydney. Her PhD in Cultural Studies from UTS explored the afterlife of two monumental social objects, the Mostar Bridge in Bosnia and the World Trade Centre, in New York, and their reconfiguration post-destruction as significant sites of collective remembering and forgetting. Andrea has taught and lectured at several universities in Australia and has also worked as a journalist in radio and television for the SBS and ABC.

Ashley Paine

ATCH Research Centre, University of Queensland's School of Architecture

Striped Effects: Articulating the Material and Immaterial

The striped interior of Siena Cathedral is often cited as a wondrous experience: the intensity of its patterned surfaces striking the viewer as both dazzling and disorienting. It is a remarkable demonstration of the psycho-perceptual effects of stripes, and their capacity to assert both the physical and visual conditions of space in a dialectical interplay that oscillates between materiality and immateriality. Of course, a striped pattern can itself be understood in such dualistic terms: as a *physical* organisation of matter into banded chromatic oppositions; and as an *optical* structure independent of its physical support. With this duality in mind, the paper examines the relationship between stripes and materiality, and the complex effects, both physical and perceptual, produced by architectural surfaces articulated with bands of materials.

Fundamentally, these effects emerge because stripes are intensely conspicuous. They draw attention to themselves and lead our eyes across a given surface. Such operative qualities of stripes can amplify, unify and clarify building form, but they can also overwhelm it, destroy its unity and obfuscate its extents. Stripes also enhance the directionality of architectural space—by asserting the frontality and flatness of the façade, or by exaggerating the phenomenal rotational movement of the building—enabling a kind of control over the perception of form, achieved through the patterning of its material and construction. This control extends over the observer, compelling them to stand before, or to move about the building, according to its frontal or rotational directives.

The paper is located within the broader contemporary context of resurgent interest in pattern and ornament. While the use of stripes has its origins in Roman construction, it will be shown to have significant implications for contemporary “surface” theory and practices. In particular, it will be argued that the effects produced by stripes actually constitute a unique kind of ornamental condition. This might be understood in terms of “perceptual artifice,” in which the organisation of materials into stripes, can locate the viewer and choreograph their movement through space, by exerting its control over the visual perception and affective phenomena of architecture.

Ashley Paine is a PhD candidate in the ATCH Research Centre at the University of Queensland's School of Architecture. His research combines historical and theoretical investigation, with design research methods and practice, to examine the compositional and spatio-visual effects of stripes on the architectural façade. Ashley is also a practicing architect, establishing PHAB Architects in 2010.

Claudia Perren
School of Architecture, University of Sydney, Australia

Information Material

This paper investigates the dematerialising capabilities of information in the realms of art and architecture. It considers the role of information in both disassembling the material/substantial character of architecture as well as the activation of materials through observation. Furthermore, it explores the implications of new technologies which, when applied to traditional materials, engage the human body in a reciprocal data exchange with its immediate environment.

The art of Thomas Demand is one of dematerialization and in this sense, one similar to the architecture of Peter Eisenman's *Cardboard Houses*. Demand challenges the material quality of his subjects by building 1:1 scale models of real spaces entirely out of cardboard; often thereby ignoring and subverting their original material composition. This process of abstraction is only conducted to a degree whereby one can still recognize an "original" space, as the replica still contains enough information for one to "see" and read, for example, a curtain even if there is no drapery or a letter even if there is no real writing.

Peter Eisenman, especially in his early houses from the 1970s, approaches his work conversely to that of Demand. His catalysts are often abstract compositions in both two- and three-dimensional media, which seek concretization through physical form, in order to become architecture. In his developmental process Eisenman withholds pieces of material information and avoids details where possible, creating inhabitable yet programmatically unspecified spaces. This resulting architecture remains self-referential and scaleless until its actualizing inhabitation. Different areas are more or less suitable for different functions, yet cannot be recognized as a bedroom or kitchen due to a deliberate lack of programmatic information. Only through inhabitation is sufficient information added via details such as door handles, knives or books and materials such as drapery, carpet or timber.

Jurgen Mayer H is taking dematerialisation further by combining the physical and digital components of our urban environment. In his urban vision 'A.WAY' Mayer arrives at a new understanding of activated space where layers of digital information are added to building materials; transforming the city and its inhabitants into a data flow; blurring the boundaries between architecture and its inhabitants and digital and physical information.

Dr. Claudia Perren is a curator, architect and lecturer in Architecture at the University of Sydney. Her research areas focus on Conceptual Art and Architecture, Moving Architecture, and Modernism. She is interested in hybrids, in questioning architecture through other disciplines, and challenging the traditionally fixed relationship between form and matter for the benefit of an integration of time, variation and development of form into architecture. Her writings have been published in Australia, Germany, the Netherlands, the Czech Republic, Singapore, Spain and Switzerland.

Dijana Alić
School of Architecture, University of New South Wales

A role of historical materialism in materialising communist Yugoslavia's architectural aspirations

Marxist critique of *mechanical* materialism questions the separation of object and subject. Mechanical materialism, Raymond Williams has argued, isolates the objects and ignores the subjects, namely human activities as subjective endeavours. The distinction between this *mechanical* materialism of the past and new Marxist *historical* materialism, which incorporates human activity as a primary force, establishes the grounds upon which *dialectic materialism* is premised (Williams, *Keywords*, 1976).

In the seminal text on the modern architecture of Yugoslav socialism, *Architecture of Bosnia and the Way Towards Modernity*" (Grabrijan and Neidhardt, 1957), co-author and architect Juraj Neidhardt presents his design method as based upon a 'dialectic' relation between the heritage fabric (a material past) and the socialist present. He argues that traditional historic fabric should be used as a vehicle in developing new ideas: creative thinking grounded in previous decades' design and construction being relevant to the local environment. Neidhardt and Grabrijan argued that separating the 'positive' values of the heritage fabric (physical qualities) from the 'negative' values (associated with cultural and religious practices) produced a useful set of architectural 'elements' through which to develop new ideas.

Ultimately, they argued that a formulaic re-arrangement of elemental architectural components would facilitate an active relationship between the object of analysis – heritage built fabric – and the new society. The method would provide practical and useful information for developing an artistic superstructure for the emerging socialist society. Neidhardt's proposals could be easily dismissed as opportunistic exercises promoting the rationalism and scientific methodologies valued by the ruling Communist Party. However, closer examination of his design methodology and his writings with Grabrijan demonstrate their capacity to successfully dissociate human activity and built form in order to transform the meanings aligned with traditional heritage fabric.

Dr. Dijana Alić holds a Senior Lecturer position in design, history and theory in the Faculty of the Built Environment at The University of New South Wales in Sydney, Australia. Her research interest focuses on the relationship between modernity and national expression in architecture, particularly in the context of (post-World War 2) 'Eastern' Europe. Dijana has published in significant international journals such as the *Journal of the Society of Architectural Historians (JSAH)*, *Open House International* and *Centropa*.

Gevork Hartoonian
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Materiality Matters: If Only for the Look of It!

This paper will discuss the presence of a digitally reproduced perception of lightness in Zaha Hadid's projects, arguing that the dialectics between materiality and image is inherent to architecture even though its mode of operation and appropriation have varied throughout architectural history. The paper will pursue the importance of material and its transformation into materiality in two historical moments, Renaissance and early modernism, and in the writing of L. B. Alberti and J. Ruskin respectively.

I will discuss Alberti alongside Ruskin in order to demonstrate how image is domesticated in architectural theory, and that there is always an element of excess in architecture, which is the locale of materiality. Having established the schism between architecture and building, the paper will then present tectonics as a theoretical paradigm in which, according to Gottfried Semper, the materiality of architecture attains significance when it is comprehended in the broader aesthetic experiences of the cultural. But what if the cultural is already saturated with image building, as is the case today, through which architecture is turned into an ornament? I will offer an answer to this dilemma through exploring Hadid's architecture. Her occasional inclination for sculpted tectonics is important in two grounds: firstly, it provides a good case to demonstrate the recoding involved in the use of concrete beyond the traditions of New Brutalism. Secondly, a critical assessment of her work is useful in opening up the discussion of materiality to include aspects of the architecture of Brutalism that might have political connotations beyond that suggested by Ruskin.

Gevork Hartoonian is Professor of Architecture and the Deputy Head of Design, Faculty of Arts and Design, University of Canberra, Australia. His research is focused on a critical archaeology of modern architecture's appropriation of the nineteenth century architectural discourses, the tectonic in particular. He is the author of numerous books and book chapters. His most recent book is titled, *Architecture and Spectacle: A Critique*, Ashgate, 2012.

John Roberts

School of Architecture and Built Environment, University of Newcastle Australia

White Table / White Aalto

Late in life Alvar Aalto wrote a brief text 'The White Table', recalling his surveyor father's white drawing table: a childhood play space, a refuge, a realm of fantasy and imagination. Aalto noted its special quality of liberty: 'A white table is as white as white can be; it has no recipe, nothing obliges man to do this or that. In other words, it is a strange and unique relationship.' White, like Finland, seemed always to be with Aalto, finding expression in different material strategies in his architecture. Aalto exploited the material and immaterial potentialities of white: historical and natural significances of white resonate in his buildings. A visitor sees how Aalto rarely left areas of white untreated; he would mark, ornament, overlay, overgrow and even deface white surfaces, inside and outside, denying their pure expanses and restlessly animating their potential blankness.

Leatherbarrow and Mostafavi in *Surface Architecture* propose that 'Forms in architecture arise out of the production methods and applications of materials'. For Aalto, white seems more than applied hue or pigment; it becomes a material for architectural thinking, making, and experience. This paper problematizes material and spatial poetics of white in selected Aalto buildings.

And when we wonder about Aalto's ways with white, emotional associations of landscape experience of white seem to be especially recalled and re-materialized: reflected light, shadow, haze, spatial and atmospheric presences of snow, ice, fog, clouds, waves. White is not background or *tabula rasa* in natural landscape, but is actively present, full of purpose. Aalto's methods in deploying white raise visual and spatial problems, perhaps even doubts: of containment and contained; of inside and outside; of solidity and evanescence; of absence and presence, figure and ground; and of haptic perceptions (rough, smooth, cold). The paper aspires to open a discussion of materializations of Aalto's – and perhaps our own – 'strange and unique relationship' with white.

John Roberts currently teaches Architectural Design and Advanced Drawing & Model Making, in the BDes(Arch) program at the School of Architecture and Built Environment, University of Newcastle, NSW. He also lectures in Site Studies, and supervises MArch research. Other teaching interests include health and housing, landscape history, art and comics, infra-local landscapes, sustainable design and workshop-related learning. John Roberts' research interests concern historical and theoretical spaces between architecture and landscape; his MPhil thesis considered prospect and refuge symbolism in Alvar Aalto's architecture. Recent publications have considered topics including: landscape aesthetics and house architecture; the houses of Alvar Aalto and Jørn Utzon; high-rise work by Aalto and Utzon; clouds, sky, waves and architecture; the art of Colin McCahon; and prospect and refuge in Australian architecture.

Matthew Mindrup
Marywood University, U.S.

Bauhaus Exercises on the Material Imagination

One of the most important schools for architecture, design, and art in the 20th century, the German Bauhaus developed a common Basic Course in 1919 to introduce creative people to design through exercises that trained their material imaginations. The German architect, Walter Gropius conceived this unique approach to design education as an alternative to the normative Beaux Arts study of exemplars in antiquity. After the departure of Johannes Itten in 1922, the Hungarian artist, *László Moholy-Nagy* changed the emphasis of Itten's exercises on a metaphysical speculation of form and color to an objective, assessment of material effects and affects. Inspired by the Austrian born botanist and nature philosopher Raoul Francé's concept of 'bio-technique,' Moholy-Nagy intended that students would extend this study of materials to the creative imagination of form in different media. One can find examples of the creative transfer Moholy-Nagy intended in his use of a harp's audible gradation of tones as inspiration for the design of a screen wall at his 1935 Dutch Rayon Manufacturers Exhibition and the wood springs developed by students at the New Bauhaus School in Chicago based upon a study of rubber. In these instances it is not the visible form of materials that are transferred from one substance to another but an architect's immaterial memories of their effects, affects, and methods of facture. Employed like metaphors in their Greek etymological sense as *metapherein*, or "transfers" of sensory information from one modality to another, Moholy-Nagy's professional and pedagogical work demonstrate a use of immaterial materialities to inform the imagination of factures in architecture and product design. This paper explores how Moholy-Nagy's pedagogical exercises at the Bauhaus sought to develop an architect's ability to think with materials in order to counter the repetition of normative designs and arbitrary willfulness of a sometimes overly rampant formal imagination.

Dr Matthew Mindrup is an architect, researcher and pedagogue who lives in Waverly, Pennsylvania where he is helping found a new school of architecture at Marywood University. In 2007, Matthew completed a Ph.D. in Architecture at Virginia Tech University on the physical and metaphysical coalition of two architectural models assembled by Kurt Schwitters in the early 1920s. Matthew's ongoing research in the history and theory of architectural design locates and projects the implications that the making and use of models have in the design process. He has presented some of this research at conferences while other parts have been published in English and translated into Chinese.

Nugroho Utomo
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Beton-Préfabriqué: On the appropriation and expansion of Brutalist materiality in Australian architecture

The New Brutalism promoted the notion of materials 'as found' and professed the virtues of the 'ordinary' – in tune with contemporary interest in the notion of the 'everyday' in architecture. This propensity toward materials 'as found' was noted by Reyner Banham and was, despite their differences, corroborated by Alison and Peter Smithson who retrospectively stated that "*we were concerned with the seeing of materials for what they were: the woodness [sic] of wood; the sandiness of sand.*" For Banham in New Brutalism "*every element is truly what it appears to be...*" This matter-of-fact approach echoed a wider shift towards the expression of materials which occurred in post-war modern architecture, and to a large extent is concerned with the question of surface and, in the case of the New Brutalism, the presentation of materials 'as fact.' Imported into the Australian context the term 'Brutalism' was simply reduced to any use of exposed concrete with no distinction between pre-cast and in-situ nor board-formed and uni-formed. This inclusive attitude can on the one hand be interpreted as a dilution of the early Brutalist position on materiality. However, it can also be traced back to Jean Dubuffet's *Art Brut* work which is acknowledged as being one of the key sources of the New Brutalism.

Establishing the historic premise of the 'as found', the essay explores how this mode of evaluating materials for their inherent properties and processes eventually permeated Australian architecture where tropes such as 'material honesty' were already commonplace. Focusing primarily on Town Hall House (1977), the essay discusses how architect Ken Woolley masterfully articulated pre-cast concrete to create exaggerated window reveals, spandrels, *brise-soleil* and other repetitive elements to animate the surface of large block-like masses that have come to typify Brutalist architecture in Australia. Further, the essay will elaborate on how the project displays tendencies that are indicative of an emphasis on surface, which can be read as being in line with the broader genealogy of Brutalism and the 'as found.' Town Hall House, however, reveals modifications to the raw materiality of the original Brutalist canon, and alludes to the notion of *delay* and *displacement* which is associated with the appropriation of foreign attitudes toward the art of building. The building is an example of how in Australia the New Brutalist sense of materiality re-emerged in the new found plasticity of *beton-préfabriqué*.

Nugroho Utomo is a PhD candidate at the University of Canberra, Australia. His research builds on more recent historiographies which have highlighted the need for further inquiry into the later developments of post-war modern architecture, primarily focusing on the Brutalist phenomenon and its importation into the Australian context. He is also a graduate architect practicing at the Canberra office of Cox Architecture and design tutor at the University of Canberra's Faculty of Arts and Design.

Peg Rawes

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Immaterial material 'ecologies of mind'

Buckminster Fuller's Dymaxion maps (1943-54) and Agnes Denes's planetary projections (1974-6) bring to light material and immaterial ecological concepts in their cybernetic 'architectures of life' which are more ecologically urgent now than when they were first produced.

Buckminster Fuller's utopian material networks – or 'ecologies of mind' (cf. Bateson) – attempted to capture the 'universal' complexity of planetary, human, technological and environmental relations through the axiomatic and projective power of material geometric systems or architecture. Thirty years later, conceptual and environmental artist, Agnes Denes's isometric maps examined the planet's material resources, especially global food trade, in distorted space-time projections, such as her immaterial 'alien' 'hot dog' or 'egg' ecology-projections. Her site-specific project, Rio Earth Summit, *Tree Mountain – A Living Tim Capsule – 11,000 Trees, 11,000 People, 400 Years* (1992-96), then repurposed this immaterial geometric method (or, what could be called her 'ecology of mind') to create a living material architecture of trees, human custodianship and reclaimed waste-land, that she intended should physically record the effects of climate change, environmental protection and damage by current and future generations.

Underpinning the discussion is Gregory Bateson's pioneering cybernetic theorisation of immaterial material ecologies or 'architectures'; for example, his conceptualisation of the immanent co-constitution of immaterial psychic ecologies and material biological ecologies in, what he called, 'information' or 'pattern' in *Steps to An Ecology of Mind*, 1972. Thus, the paper argues that the ecological and geometric immaterial materialities that Fuller, Denes and Bateson developed for cultivating and projecting human and environmental biodiversity/difference, resonate with architects and artists today who seek to produce immaterial ecological ideas/thinking and materials ecology-practices that address the over-consumption, pollution and resource-depletion of our human and non-human environments.

Dr Peg Rawes is Senior Lecturer, and Thesis History & Theory Coordinator, MArch Architecture (RIBA Part 2), at the Bartlett School of Architecture UCL. Her teaching and research focuses on interdisciplinary links between architectural design, philosophy, technology and the visual arts, and has been developed into publications that examine: spatiotemporality and embodiment; minor traditions in geometric and spatial thinking; new aesthetic and material practices; relational architectural ecologies. Publications include: *Relational Architectural Ecologies* (ed.) (Routledge, forthcoming 2013); 'Spinoza's architectural passages and geometric comportments', in B. Lord (ed.) *Spinoza Beyond Philosophy* (2012); *Space, Geometry and Aesthetics* (2008) and *Irigaray for Architects* (2007).

Rebecca Uchill
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Art(i)facts versus Fictive Factures: Alexander Dorner's Immaterialities

A broad spectrum of early and mid-20th century art preservation philosophies variously favored the original intention, original form, and original material of cultural objects. From Erwin Panofsky's suggestion that experiencing artistic meaning (*Sinn-Erlebnis*) was achieved independent of retaining *Echtheitserlebnis* (experiencing the fidelity of authenticity) – to Kurt Karl Eberlein's hyperbolic argument for the value of Rieglian *Alterswert* of aged materials – the full range of positions on artistic authenticity, material and otherwise, was represented in a compressed series of debates published in German art journals between 1928-1930. At the center of these conversations was the director of the Hannover Kunstsammlung, Alexander Dorner. Dorner vouched for restorations and reproductions alike, arguing that these were no more in violation of an artwork's original sensibility than the regular recontextualization of historical cultural materials within modern exhibition environments.

Upon emigration to the United States in the late 1930s, Dorner brought his defense of restoration to bear on the Rhode Island School of Design Museum of Art (RISD)'s collection objects, restoring artistic fragments to their (estimated) full contours. Dorner also extended his polemic against the veneration of original materials by prioritizing ever more elaborate contexts for museum viewership: drawing both on his work in Hannover as well as on contemporaneous exhibition devices in North Eastern United States museums, Dorner developed immersive environments in which to display objects and enhance viewer engagement. Dorner's post-RISD years were characterized by his explicit endorsement of art and museum *experience*, with particular recourse to American Pragmatist John Dewey's notion of transaction-based encounters. However, this paper will argue that Dorner's productions of gallery contexts for visitor experience stemmed equally from a desire to shift the conversation about *material* objecthood as from the theories of perception or democracy that he so often cited. Dorner's tenure at RISD thus offers a rich focal point for considering shifting midcentury Euro-American discourses about the materiality of art as well as the subjective experiences of audiences.

Rebecca Uchill is an independent curator and PhD candidate at MIT, in the Department of Architecture's History, Theory and Criticism of Art discipline group. Her research focuses on the institutional conditions for art production, display and dissemination. Uchill is co-founder of the cultural event production series Experience Economies, and she has held curatorial positions at the List Visual Arts Center, the Indianapolis Museum of Art, and Mass MoCA. In fall of 2012, she will be developing her research on Alexander Dörner a visiting scholar at the Leibniz Universität Hannover, with support from the Deutscher Akademischer Austauschdienst.

Ross Jenner
Executive Editor of *Interstices*, Senior Lecturer
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Ambient Atmospheres

Concepts of 'immateriality' in architecture arose with those of 'space'. The relation immateriality/materiality parallels that of space/material. This pairing of matter and that "most immaterial of properties – 'space'"¹ would seem constitutive of modernity. Generated here are notions of ambience, envelopment, atmosphere, setting, surroundings and context, which in the sciences became those of environment, milieu, medium and habitat. Schmarsow's² extension of empathy from solids to void offered a notion of bodily experience at the core of a space "whose co-ordinates intersect in us". Hildebrand's³ conception of space as extension led to that of spatial continuum "as a body of water" in which individual solids are immersed - a correspondence anticipating Valéry⁴ and Sloterdijk⁵. Hildebrand's wish to make "visible the appearance of this natural space" implied that the void exist "not as something externally limited but rather as something internally animated" where "the boundary of an object is, strictly speaking, also the boundary of the body of air surrounding it", anticipating Heidegger's notion of the boundary as that from which presencing begins.

The focus of this paper lies outside the classic conceptions of space in Modernism: can a spatiality of atmosphere and relation, felt space, specifically, in the works of Italian architects Edoardo Persico and Franco Albini be the seen as an adumbration of today's 'immaterial materialities'? Critics noted Persico's "Impressionistic sensibility" in installations such as the "Hall of the Gold Medals" (1934) and the "Hall of Honour" (1936) where "the voids have a compositional value even more alive than the solids." His was an "aspiration towards an architecture of voids, a spatial architecture which (...) can be identified with his preponderant longing for the freest airy independence of the spirit."

Albini's installations from 1935-60 tend to the experience of a linear abstraction subtle to the point of being almost purely graphic and animated by contact with an "atmospheric sensibility" of space rather than solid materials. A colleague, discussing Albini's apartment in via Milan, emphasized an 'essentially spatial' expression, repeatedly using the phrase 'atmospheric spaces' (spazi atmosferici) to characterize its rooms "delimited ideally even just by hints."⁶ Such works are the legacy of Impressionism and the spatial Interpenetration of Crystal Palace. They make atmosphere perceptible as a poet might the ineffable.

"Atmospheres", notes Böhme "are something that defines the human-in-the-world as a whole, i.e. its relationship to the environment, to other people, to things and works of art."⁷ Put otherwise, "the admission into space is a giving of the thing to relation."⁸ Albini's notion of space as rapport is an attuning of the body to the works exhibited, focusing and interpreting them through the "setting of a particular atmosphere (un ambiente di atmosfera particolare)". This "ambientamento" –acclimatisation- must arouse an atmosphere which "must not be fixed or stagnant but pulsate and the public must find itself immersed and stimulated here without noticing it." To achieve this, he argued, "it is the very voids which must build - air and light being building materials."⁹

Ross Jenner teaches at the University of Auckland. He has practised in Britain, Finland, Switzerland and New Zealand. His PhD from the University of Pennsylvania was on Italian Rationalism. His writing and projects have been published in several books and numerous journals, including *Transition*, *Architecture Australia*, *Lotus*, *The Journal of Architecture*. Having published on buildings by Peter Zumthor and Ruskin's *Stones of Venice*, he is currently working on a book on Italian architecture between Futurism and Rationalism. With Tina Engels-Schwarzpaul, he is executive editor of *Interstices, Journal of Architecture and Related Arts*.

¹ Forty, A. (2000); *Words and Buildings: A Vocabulary of Modern Architecture*.

² Schmarsow, A. (1894); "Das Wesen der architektonischen Schöpfung"

³ Von Hildebrand, A. (1893); *Das Problem der Form in der Bildenden Kunst*

⁴ Valéry, P. (1921); *Eupalinos ou l'Architecte*

⁵ Sloterdijk, Peter (2006); "Architektur als Immersionskunst"

⁶ Romano, G. (1941); "La casa di un architetto."

⁷ Böhme, G. (2006); *Architektur und Atmosphäre*

⁸ Mitchell, A. (2010); *Heidegger Among the Sculptors: Body, Space and the Art of Dwelling*.

⁹ Franco Albini "Le mie esperienze di architetto nelle esposizioni in Italia e all'estero"

Ross McLeod
Senior Lecturer
RMIT

FIELD AFFECTS: Shaping Spatial Experience

The paper documents the findings from a series of experimental design projects which have sought to question the basis of creative thought and expand the perceptual and cognitive tools that may be brought to the manipulation of objects and spatial phenomena. The foundation of this body of work involved the development of a theoretical and perceptive base to design, which eschews the conception of materiality and physical form as the central concern in the fashioning of objects and spaces, and embraces the comprehension of the physical fields that affect sensorial experience as its primary concern. A key to the development of this ethos is the idea that the design of our physical environment can be enacted through the manipulation of fields of wave-like phenomena. In this process the conceptual base for design is envisaged as the harnessing of fields of energy rather than the shaping of inert matter.

Through the iterative and exploratory nature of design thinking, the projects addressed the inherent physical connection between light, sound, form and materiality and developed design methodologies in which the observation of the field-like behaviour of one kind of spatial phenomena could be employed to develop an understanding of another. Addressing the foundations of the design process in such a way exposed a creative methodology in which the consideration and manipulation of the material and immaterial aspects of the physical world transcended the traditional boundaries that lie between the distinction of matter and phenomena. In this approach to design thinking, the essential creative act is seen as a marriage between the precise manifestation of phenomenal fields and the perceptual affects that they create. In such a schema, the designer's role is considered to be a cross-disciplinary and trans-modal practice that is involved in the shaping of spatial experience.

Dr. Ross McLeod has spent the last twenty years engaged in a practice that has sought to extend the boundaries of design thinking. This practice has been enacted through the teaching of undergraduate and postgraduate students, the curation of exhibitions, the organising of conferences, the writing of essays, the editing of books and the design of furniture, sculpture, installations and interior spaces. Works include the publications *Interior Cities* (1998), *INTERsection* (2002) and *the Sensuous Intellect* (2006) and the international exhibitions *Hybrid Objects* (2002), *Tyranny of Distance* (2004) and *Design Life* (2010, 2012). Recent design projects have included: *Auroral*, Stylecraft showroom, 2010; *Transience of Light*, Euroluce Melbourne, 2011; *String Theory*, dedece, 2012; and *Animate Activate*, Stylecraft showroom, 2012.

Ruth McDermott

Lighting Designer and Doctoral Candidate, University of Technology Sydney

Translucency, brilliance and sparkle: an exploration of the interplay between light and materials

The sun never knew how wonderful it was until it fell on the wall of a building.

Louis Kahn

There is something of a romance between materials and light. Light reveals the particular texture and patina of materials. Materials give light character and shape the ways in which it functions in our lives. Historically, most light technologies have found or invented a material that best complements and enhances their particular properties. Prior to the 18th century candles were an important light source, but it took the invention of glass with a lead content ("lead crystal") cut into prismatic shapes and used in chandeliers to give sparkle to their soft light. The light was refracted by a multitude of prisms, making it possible to light whole rooms.

Designers are currently coming to terms with a new light source – light emitting diodes sometimes known as solid state lighting. LEDs were originally developed as indicator lights but are now considered the future of lighting in architectural and interior applications due to their energy efficiency and long life.

LEDs pose significant challenges in creating acceptable light for interior settings as they are essentially tiny pin points of high glare with highly directional light. Their small size means that they cast strong well defined shadows and the actual light source itself needs to be shielded from direct view.

LEDs perhaps more than any other light source will rely on highly differentiated interactions with materials to generate light quality appropriate to particular contexts. In the following I explore the relationship between light and materials drawing on the fundamental optical principles of refraction, reflection and diffusion.

In this paper I argue that we need to enrich the repertoire of designers in the fields of architecture, interior design and lighting design so that they become aware of how to make use of the rich interplay of light and materials as lighting technologies evolve.

Ruth McDermott is a Sydney based designer and academic with an industrial design background. After working in many product design areas she now creates site specific lighting works for festivals and clients and has exhibited in Milan, Tokyo, Seattle and throughout Australia. She is currently undertaking a doctorate in design at the University of Technology Sydney on the use of LED light sources in architectural applications. Her research is exploring how new typologies of light fitting could exploit this new light source more effectively. She has presented papers based on her research at ConnectED 2010, IASDR 2011 and at Lightfair (the largest lighting conference in the world) in 2010.

Sophia Psarra
Reader in Architecture and Spatial Design
The Bartlett School of Architecture, University College London/U.K.

Self-organisation and Theoretical Reflection: The (im)material architecture of Venice and the Venice Hospital

New developments in architecture and digital design technologies since the 90s emphasize a shift from theory to practice, and from object-oriented architecture to 'field conditions' where what matters is not the geometry of elements hierarchically disposed to form wholes, but 'fields' of self-organisation based on local-scale relations. Drawing from biological analogies and complex theory in mathematics and physics, these design paradigms turn away from the material object to immaterial social, ecological and experiential phenomena, such as user behaviour, interactive environments, atmospheres, ecologies and evolutionary networks. These paradigms are often illustrated by speculative projects of the 60s, such as Le Corbusier and Julian's Venice Hospital. I will explore Venice and the Venice Hospital in relation to two questions: What does happen to materiality and immateriality when architecture is conceived as a 'field' instead of being seen as an 'object'? Is it possible to conceptualise these notions within specifically architectural theory instead of borrowing theories from other disciplines?

Combining spatial network analysis with historical records I will discuss the Hospital and Venice as its urban context. I will first analyse the Hospital as a formal and spatial system to show that it is a product of consciously applied rules that if built would result in a spatial culture of un-programmed events and serendipitous social encounters. Such a collective immaterial outcome can provide a new definition of the architectural programme based on social co-presence, institutional flexibility and improvisation. I will then analyse Venice's spatial form alongside historical information to reveal an evolutionary pattern of urban form. This pattern is centred on the nodal position of urban squares in the pedestrian and water networks, their key economic and cultural function, and corporeal treatment since early times. I will then suggest that the architects of the Hospital retrieved the self-organising dimensions of Venice and creatively reconfigured them in a new design reality.

Finally, I will extend this discussion to the notions of conception and perception - and to contemporary architectural ideas based on emergence and self-organisation. The latter might catalyse architecture and broaden the imagination, but divorce conscious thought from the generative process of design reiterating an old division between the material world and the mind. Conception refers to the immaterial aspects of form, often seen to be rational; perception refers to experiential aspects of the environment, and is often seen as material and sensual. As the case of the Hospital shows, the conscious development of space and form and the unconscious self-organising patterns in cities and architecture are not separate but intertwine. Aside to theories of design generation, we need theories of explanation, if we are to understand architecture through its own material and immaterial dimensions, instead of attaching ideas to architecture as scientific appendices. I will conclude that theory exists within the practice of design itself guiding answers to the questions about user behaviour, experiences and social relations. The key to architectural design lies in the comparative understanding of the products of architecture as spatial, social and experiential entities. This can be found in reconceptualising materiality and immateriality to take into account how architecture is conceived, how it is perceived, and how is informed by processes that are self-organising.

Dr. Sophia Psarra is a Reader in Architecture and Spatial Design at the Bartlett, UCL. Previously, she was Associate Professor at the University of Michigan and Senior Lecturer in Cardiff University. Her research explores the relationship between spatial characteristics, patterns of use, social relations and cultural meaning. She has collaborated with cultural institutions on the relationship between layout, exhibition narratives and visitors' experience (MoMA, New York, The Natural History Museum, London). Her activities in these areas have resulted in publications, (*Architecture and Narrative – The Formation of Space and Cultural Meaning*, Routledge 2009), creative installations and design projects. She has won first prizes in international architectural competitions. Her work has been exhibited in Venice Biennale, the George Pompidou Center, NAI Rotterdam, London, Berlin, Milan and Athens, Greece.

Stephen Loo
Professor of Architecture
University of Tasmania

Impersonal geometries

There is a disposition in contemporary digital architecture towards a 'flattened ontology' where the milieu of design performance is composed of continuously relational immaterial entities, whether they are parameters and their abstractions, associations and the algorithms that represent them, or digital forms and the images that express them. And this immaterial realm of information and process has a tendency to take precedence over actual material objects as outputs of digital architecture.

This condition of absolute immateriality in digital architecture can be seen, in Deleuze's philosophy, to be a variation of the ontology of immanence in which there is an "equality of being." (Deleuze, *Expressionism in Philosophy*, 1992: 173) Proponents of a current movement called 'object-oriented ontology' (OOO) have appropriated this Deleuzian proposition in support of a 'speculative materialism.' Speculative materialism sees the world as completely made up of objects, the ontologies and agencies of which are impersonal, that is, independent from that defined by human beings, thus positing a critique of anthropocentric thinking in the material world. Speculative materialism is paradoxically appropriated by some parts of contemporary digital architecture to eschew authorial intention of the architects and to release architecture from humanist determinants, towards and auto-emergentist attitude to digitally designed objects.

This paper mounts an argument resisting the appropriation of object-oriented ontology that supports the impersonality of immaterial digital architecture. It will attempt this, ironically, through an investigation of the geometry and mathematics of the immaterial milieu. Geometrical abstraction – the mathematics of differential and infinitesimal calculus in particular – posits the digital milieu in what Quentin Meillassoux calls 'absolute contingency': the digital milieu as something that "can be described and has to be described" (Meillassoux, *After Finitude*, 2007: 5) by geometry. Here, it is impossible to conceive the reality of the object in itself is because we cannot "distinguish between properties which are supposed to belong to the object and properties belonging to the subjective access to the object." The impersonal geometry of the immaterial milieu of digital architecture comes to possess a factuality imbricated in personal material effects. It is a moment when the abstract extensivity of the discipline is made into the intensity of individuation or subjectivity, requiring a altogether different economy of attention.

Dr Stephen Loo is Professor of Architecture at the School of Architecture & Design, University of Tasmania. He has published widely on affect and the biophilosophy of the contemporary subject, ethico-aesthetic models for human action, and experimental digital thinking. His current research (with Undine Sellbach) concerns the connections between ethics, psychoanalysis and the space of the entomological imagination with forthcoming publications in *Angelaki* and *Parallax*.

Steve Harfield
Associate Professor in Architectural Theory
University of Technology Sydney

A Deceptive Surface: Photography, Materiality, and Inference

Such supposed information retrieval from the subject matter of the photograph leads us to assert an effectively uncomplicated ‘perception’ and/or ‘interpretation’ of the photographic content – based perhaps on the ‘mechanical’ nature of such reproduction, and irrespective of our knowledge and appreciation of the ability to ‘tamper’ with such content. ‘Perception’ here is understood to signal a relatively uncritical level of information availability, whereas ‘interpretation’ suggests a more sophisticated and self-aware level of comprehension. What we *see*, we therefore convince ourselves, is what we *get*; what is *in* the photograph is precisely that which we can easily draw *out* from it; what the photograph clearly *shows* provides unequivocal evidence for and reinforces our *understanding* of its content.

Yet all of this is mere *assumption*. What we perceive is no more than a ‘surface’ perception, a statement of the apparently obvious content of the photographic image based on no evidence beyond our own assumptions *about* that content. What we ‘get’ – or so we believe – is precisely what we ‘see’, although this seeing, and our concomitant interpretation, is both depthless and inferential. And while a given photograph may, in key respects, *be* transparent to its referent – this image *is* of a woman in her ‘fifties, of working class background, photographed in a less than salubrious environment – we cannot know *from the photograph itself* that this is the case. It could – just as easily, though perhaps less convincingly or less ‘apparently’ since we have a tendency to rush to the most direct and ‘self-evident’ explanation – be a ‘set-up’ photograph constructed by the photographer for some particular purpose, a still from a television series, a fancy dress ball, and so on. As such, our understanding of, our interpretation of, and our simple belief in any of the above, is thus inferential rather than evidential.

Photography is thus, *par excellence*, a medium of materiality and ‘presence’ on the one hand, and of inference and self-constructed ‘knowledge’ on the other. And while our belief in the ‘meaning’ of photographs is almost inescapably reinforced by the *apparent* content of the image itself – the self-imposition of evidence, rather than the analysis of demonstrable and unequivocal ‘fact’ – our supposed understanding of any photograph comprises the (super)imposition onto the image of our own assumptions and beliefs, preferences and prejudices, expectations and desires. Inference, therefore, rules; and belief – neatly and, too often, uncritically – follows! Drawing on a variety of sources the paper argues that our engagement with the photographic image is not merely interpretative but simultaneously both assumptive and inventive. The photograph thus constitutes a deceptive surface, a veritable Plato’s cave of triggered possibilities. And it is on the basis of the supposedly indexical, but by virtue of the ‘supersensibility’ and self-imposition of the viewer, that the image is re-animated, re-vivified, and drawn back to life, albeit a life of supposition, potentially far different from its beginnings before the camera lens.

Steve Harfield is Associate Professor in the School of Architecture, Faculty of Design, Architecture & Building, at the University of Technology Sydney where he has lectured on theory, design and history since 1988. His primary research interests focus on the analysis of design and design thinking from a theoretical perspective. Specific foci are the *ontology of design* (exploring the nature of design and of design concepts); *design, problems and ‘problematization’* (investigating problem solving and the structure of problems, the nature of design problems, and the issue of problem construction in design); *normative positions in thinking systems* (explicating and theorizing the role of ideology, tacit knowledge, personal constructs, regimes of truth, etc., in design thinking and design decision making); and *theorizing design processes*. Associate Professor Harfield has presented papers at major local and international conferences and has been published in international journals such as *Design Studies* and the *Journal of Architectural Education*. Ongoing projects include work on complexity and emergence in relation to design thinking; on the dislocation between generation and justification in design processes; on the nature of design problems; and on relations between architecture and music.

Thomas Mical
Associate Professor
University of South Australia

Transparency in Glass: Medium, Message, Symptom

The characteristic trait that marked modern architecture's difference from the lure of antiquity was the collapse of transcendence into the immanent and nearly invisible materiality of glass. The surfaces of modernity are the skins of desires, the translucent surfaces of sense. In the case of architecture, where the modifications of the skin are conceptual and constructed, the modernist tendency of asceticism manifests itself in the skin becoming transparent, an infrathin tissue that promises the revelation of truth, of the real, through the optical negation of the surface.

The compulsive repetition of glass surfaces, simultaneously an avant-garde "culture of negation" and a "projective utopia" was a response to the metaphors of transparency within modernity, now recognized as an overarching myth, in that transparency is always partial, contingent, and masks something else. Rowe and Slutzky's influential retroactive identification of architecture's bivalent literal / phenomenal transparency is challenged by Lefebvre's writings on transparent space, and most recently revised by architect-theorist Toyo Ito, who proposes further tropes: liquid, erotic, and opaque transparency.

Transparency-in-glass is more accurately historicized following McLuhan as a medium whose message is a previous medium, paradoxically concealed in plain sight. The transparent surfaces of sense sustain the optical models of Enlightenment subjectivity, and are therefore most accurately analyzed using the Lacanian "symptom" - "symptom" performing as metaphor, as censor and truth of a suppressed signified. The symptomatic "delay in glass" is also here proposed to be the interruption of the glass surfaces, in concept and affect. The "massage" of transparency will be exposed as the repressed irrational desires that were smoothed over in the fantasy of a homogenous universal spatial continuum of modernity.

Thomas Mical is Associate Professor of Architecture at the University of South Australia's School of Art, Architecture, and Design. He is the editor of *Surrealism and Architecture* (Routledge, 2005). He completed his professional Master in Architecture at Harvard University Graduate School of Design with a thesis on *Blade Runner* and Tokyo cyborg urbanism; his first doctorate at Georgia Tech on Nietzsche and De Chirico, and his second doctorate at the European Graduate School in Media-Philosophy. He has taught at the Technical University of Vienna, University of Chicago, University of Florida, Carleton University, Rensselaer Polytechnic Institute, Illinois Institute of Technology, and Georgia Tech. His professional design experience has been in Chicago and Tokyo. His research examines some intersections of Architectural Theory, Surrealism, Transparency, and Hauntology.

Mina Yaney
PhD Candidate
Vienna University of Technology, Austria

Post-parametric Architectural, Aesthetical and Sociopolitical Configurations

In considering how materiality has been fabricated and deployed throughout modern technoscience, one observes an underlying operating deterministic-analytical *anthropocentrism* bending nature according to human's intentional will. Variants on such a claim are reminiscent of Heidegger's critique of modern technology, in the seventies, where he describes the essence of modern technology as *Enframing*, [Ge-stell], which transforms the world into an instrumental "standing-reserve". Hence, organic materiality has been conceived of as passive, inert, and therefore subject to intentional configuration and organization into desired ends, such as products, objects, and habitable structures. Perhaps the imagery of the *Vitruvian Man* and of the concomitant model of the *machine*, as modern guiding metaphors for the production of built environments, depicts how the modern project has been distinctly based on a cognitive approach to materiality.

However, the history of British cybernetics offers a different conception of materiality as well as a concomitant form of technology and science that attempted to generate propositions to circumvent a modern domination of nature through knowledge while incorporating the morphogenetic and adaptive intelligence of embodied matter. The projects of Britain's leading cyberneticians, Gordon Pask and Stafford Beer, as well as their approach of what one may call *embodied or biological computation*, are most indicative of such cybernetic approach to materiality. The paper critically investigates the interrelation of materiality, information, interactivity, and interfaciality in the case of Pask's notion of *chemical computers* while characterizing his approach as generating quasi-organic *electrochemical interfaces*.

Subsequently the paper attempts to expand the Paskian conception of *electrochemical interfaces* by the introduction and evaluation of the notion of *metabolic biotechnical interfaces*. This introduction seeks to expand on the interfacial (and nondual) opportunities provided by recent developments in biotechnology as potential source of technology, methodological, theoretical, and material transfer. The paper concludes with speculations on how architectural design might, thereby, be rethought as biotechnical interface between *intentionally-dependent* and *intentionally-independent* systems while inducing organic *habitable structures* from within – via modulation and interfacing - rather than mechanically and intentionally imposing rigid form from without.

Mina Yaney is an architectural designer and a PhD candidate at the Vienna University of Technology.

His thesis *Becoming Skin: Cultivating Interfaciality* grapples with the undertheorized philosophical notion of the interface as ontological and epistemological device while relating it to recent developments in biotechnology. His work attempts to create propositional synergies between architecture, philosophy, social sciences, media theory and emerging biotechnologies. He is co-founder of the Vienna-based association *ImPlanTat* and collaborated with architect Wolfgang Tschapeller at the international competition *Bauhaus Europa*, was awarded at the international competition *Techtextil*, (2009) and gained 2010 the distinguished Fohn-fellowship for extraordinary projects in Vienna.

Matthias Ludwig
Professor of Architecture
HS Wismar, Germany

Ulrich Müther : Cast in Concrete (invited contribution)

For a long time the work of Ulrich Müther has received little attention. The main reason for this is not ignorance, but the fact that he has worked as a structural engineer in East Germany - behind 'the iron curtain'. His buildings stand out not only for their constructive aspects, but also for their exceptional spatial and architectonic characteristics that are defined by their construction material – concrete. Müther's skills in bringing concrete into a well-considered and structurally-optimized form allowed him to design architectural objects with outstanding aesthetic qualities. His architecture generated an aura of experimentation and cosmopolitanism that stood diametrically opposed to the ubiquitous "Plattenbau" of the former GDR.

Müther referred to himself as formwork virtuoso (Schalenbaumeister) to underscore his comprehensive skills as both engineer and architect. Over a period of 30 years, he designed more than 60 concrete formwork buildings, all of which were designed and fabricated by his own company *VEB Spezialbetonbau* on Rügen – with specialist machinery imported from the "capitalist West". Mostly conceived as prototypes for serial production, only few of his constructions are free standing architectural objects. The current state of his buildings ranges from expertly executed renovations to deliberately instigated demolitions – the most negative example being the destruction of his so-called "maple leaf" building in Berlin in 2000.

Following the political changes after the opening of the East German borders, Müther's work has gained increasing recognition in Western Europe. Particularly in Switzerland, numerous publications and exhibitions (Architekturforum Zürich) testify to a growing interest in his architecture. I will argue that, despite his isolation, Müther wrote an important chapter in the history of precast concrete construction with his unbelievably light formwork and his buildings are to be regarded as of equal importance to the cast concrete works of Felix Candela Outerino in Mexico and Heinz Isler in Switzerland.

Matthias Ludwig is Professor of Architecture at the Hochschule Wismar and partner in the Stuttgart-based architectural firm *büro für architektur*. The work of his practice has won multiple national awards and has been named by *wallpaper* magazine as one of the "Top 25 architect practices around the world". He studied at SAC under Peter Cook, at the University of Applied Science, Stuttgart and The Bartlett, University College London. Matthias held a fellowship at the Akademie Schloss Solitude in Stuttgart and has taught at the University of Western Australia in Perth and at the State Art Academy in Stuttgart before his professorial appointment at Wismar. His research focuses on mobile architecture and prefabricated buildings and he is author of the book *Mobile Architektur - Geschichte und Entwicklung modularer und transportabler Bauten*. In 2011, he was appointed as the director of the *Ulrich Müther - Archive* in Wismar.

André Bélanger

School of Law, Université Laval, Québec/Canada

Anne Bordeleau

School of Architecture, University of Waterloo, Ontario/Canada

Material Antagonism: Art, Law and Architecture (presented as a film during breaks)

We are interested in the materiality of the architectural project and the legal contract as social artifacts, here contrasting their materiality to their possible reification. Shadows in an economically driven world, the architectural project and the legal contract can too often merely serve a society promoting ent'art'ainment. And yet, they both bear the potential to act as indexical signifiers in complex social realms. Studying art works that are situated at the junction of law and architecture, our intention is to foreground the critical role of the contract and the architecture as social artifacts, tangible traces of the subjective and intangible in-between.

To question the desocialization currently affecting both these practices, our study considers artistic uses of the contract in different architectural settings (e.g. art galleries, museum, art fairs, street art). In particular, we turn to the work of Santiago Sierra, an artist who has been paying homeless people, illegal immigrants, prostitutes or black people to perform in various artistic venues. Operating in a blurred legal and spatial zone, Sierra reveals that the capacity of the artist to critic, reinvent, and reinterpret the world is clearly part of the legislative process.

His practice also exposes the distance between artistic venues as institutional frameworks that somehow open a normative space in which some illicit activities may exceptionally surface, and the actual walls and floors of the architectural setting against which these activities are cast. His work thus points to architecture's and the contract's material significance, both bearing effects that extend much beyond the codification and limitation of social behaviors and spatial movements.

Learning and building from Claire Bishop's criticism of relational aesthetics and her emphasis on antagonism, the intention is to explore how Sierra's juridical-based performances, displayed as spectacles in different artistic venues, bring to the fore the crucial, complex and material dimensions of the contract and of architecture as social artifacts.

Professor André Bélanger has been teaching law at Université Laval since 2002. He was awarded a doctoral degree in Law at Université Laval, after completing a DEA at the University of Montpellier I. His research and teaching activities centre on contract theory. Some recent publications include interdisciplinary studies on the relation between linguistics and law (Bakhtin and ScaPoLine), incursions in sociology (Mauss, Honneth), and critical considerations of literature and statistics in relation to the theory underlying contract.

Anne Bordeleau is an architect and professor at the School of Architecture of the University of Waterloo, where she teaches design studio and cultural history. A postdoctoral Fellow at the Paul Mellon Centre for Studies in British Art, she holds a PhD in Architecture from the Bartlett School of Graduate Studies, and a professional degree as well as a post-professional Masters in the history and theory of architecture from McGill University. Her work on nineteenth-century architectural history and theory, on the indexical nature of architecture and on architectural representation has been published in *Architectural Theory Review*, *Footprint*, *Journal of Architecture* and *Architectural History*.

Agnieszka Mlika
Artist and PhD Candidate
Central Saint Martins College of Art and Design, University of the Arts London

Painting Architecture: Material Modes of Projective Thinking (presented as a film during breaks)

Is it possible to imagine a work which behaves like architecture, without 'looking' like architecture? With this question, Stan Allen suggested a new line of affiliation for architecture: painting, based on an analogous effect to architecture's functioning rather than its materiality. This paper, as part of a practice-based PhD, builds upon Allen's suggestion by analysing how contemporary painting can contribute to 'design thinking' by its potential to simultaneously visualise the material and the immaterial qualities of architecture. It is argued that the architectural discipline has not developed the appropriate methods to visualise a holistic understanding and experience of space, but rather developed a rational, reductive and abstract visual language. However, the visualisation of architectural projection ought to reflect the wider realm in which architecture functions, if we are to accept Cedric Price's claim that the best solution to architectural problems is not always a building. The presented project 'Painting Architecture' is analysed to understand whether, and how, painting - in its threefold meaning of medium, form and practice - can reflect and contribute to a larger paradigmatic shift in the architectural profession from an autonomous art of design to a practice which embraces social responsibility and contingency in its processes. By borrowing from fine art the concept of relational aesthetics, the paintings are produced during dialogues by visually tracing the process of spatial thinking. As such, the painting functions as a mediator, reflecting 'design thinking' as an interactive process of confrontation, negotiation and collaboration, thus anticipating contingency and potentiality. While this shifts the interpretation of the painting from an aesthetic object to a functional tool, it suggests for the architectural discipline a material mode of thinking that reflects an increasingly immaterial architectural practice as spatial agency.

Agnieszka Mlicka is an artist and PhD candidate at Central Saint Martins College of Art and Design, University of the Arts London, following initial research at the School of Architecture and the Built Environment, University of Westminster. The practice-based research investigates what contemporary painting can contribute to the process of architectural design. This builds upon MA research into the motives and methods of drawing cities at Wimbledon College of Art, UAL. Prior to this, she received an MA in Fine Art from the Ruskin School of Drawing and Fine Art, University of Oxford. For further details: www.agnieszkamlicka.com