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INTERSTICES 14

IMMATERIAL MATERIALITIES

Immaterial Materialities

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Cover image: 1:1 Prototype for Research Pavilion, UTS, Materiality Lab II, 2012 [Photo: Wayne Cheung].

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Immaterial materialities: Aspects of materiality and interactivity in art and architecture

Sandra Karina Löschke

In the past decade, materiality has claimed centre stage in architectural discourse and practice, yet its critical meaning is ever receding. Tropes like digital materiality, material responsiveness, trans-materiality and dematerialisation mark out an interdisciplinary field where scientific fact and artistic experimentation interact, and where what in fact constitutes materiality and immateriality is constantly re-imagined.

As a reaction to developments in science, materiality came under scrutiny with the emergence of nineteenth-century German aesthetics. Robert Vischer's advancement of space-empathy relations under the heading of *Einfühlung* (empathy) (1873), August Schmarsow's location of spatial awareness in the interplay between body and material elements (1914), and Alois Riegl's parallelism between *Tiefraum* (deep space) and *Empfindung* (sensation) that he termed *Raumwirkung* (spatial effect), (1908: 43) all represented attempts to intellectually capture the material world. Advancing a deeper awareness of the physical aspects of art reception, these art historians interrogated the interrelations between material arrangements, perceptual functions and psychological states. The impression received from materials did not necessarily derive from scientific data or physical contact, but from an understanding of ourselves as in a specific sensory relationship to a material – it is precisely this intuitive relationship that was understood to mark materiality as distinct from materials.

Many of these ideas re-emerged transformed in the early avant-garde projects and manifestos of El Lissitzky, Moholy-Nagy and others. If the art historians before them analysed and theorised materiality, the avant-garde looked to unlock and apply its transformative powers, adapting them in the pursuit of socio-political aims. Their art installations and exhibition designs tested these earlier theoretical concerns by experimenting with ephemeral elements such as light, colour, image and film. Under terms such as "materialised energy" (Vesnin 1922: 68), the interrelations between human beings and the material elements were reconceptualised as entirely dynamic. As a consequence, artistic activity involved the organisation of intersecting fields of energy rather than the static composition of objects promoted by traditional art. Thus, to reiterate, environments were believed to impact both psychologically and physiologically on the conscious mind of human beings and stimulate energetic activity in everyday life.

It is from the reading of an avant-garde text – El Lissitzky's 1925 essay *K. und Pangeometrie* (Art and Pangeometry) – that the idea for the 2011 Interstices Symposium "Immaterial Materialities" developed. Charting the variability of spatial conceptions from the origins of perspective to then-contemporary artistic attempts, Lissitzky arrived at what he called an "immaterial materiality" (128) – film and commercial displays, he suggested, hinted at the possibilities of constructing material objects in such ways that they constituted solid objects when in a static state but, when set in motion, produced multiple spatial articulations that constituted an imaginary space for the duration of their movement. In this essay, Lissitzky, it seems, pre-mediated the applicability of these ideas, which he

Fig. 1 Reconstruction of the Abstract Cabinet at the Sprengel Museum Hannover, Germany (1968) [Photo: author]

explored in quite literal ways in his demonstration rooms[1] with multi-coloured, striated walls of fluctuating appearance that responded to the movement of the viewer with alternations of white, grey and black depending on the standpoint. Initiating an epistemic shift in art and architecture, these works pointed to the connection between the concrete material properties of objects and their interaction with the inhabitant through psycho-physiological effects.

The logic of immaterial materiality found its immediate consequence in the process of design: objects were no longer to be constructed to satisfy aspects of monumentality, formal style or functionality, but to generate a multitude of temporal perceptions and effects.

Lissitzky's clever paradox seems to me to operate on a number of levels. First, it refuted efforts to reduce the materiality of architecture to a formal language of material choices and pragmatic considerations – in expanding the "material" reality of the object with the addition of an "immaterial" dimension, he celebrated the *informality* and incompleteness of the art object, proposing what Eco described as a

1 For a discussion of Lissitzky's demonstration room at the *Internationale Kunstausstellung Dresden* in 1926 see K.-U. Hemken, 1990: 46-55.

"configuration of stimuli whose substantial indeterminacy allows for a number of possible readings and a 'constellation' of elements that lend themselves to all sorts of reciprocal relationships" (Eco 1967: 84). Second, as an invention of our minds and imagination, Lissitzky's notion of an "immaterial materiality" acknowledged the viewer, or user, as a constituent part to the experience of art, architecture, and our environment in general. And third, as a consequence of its status that implicated a reciprocal relationship between the perceiver and the perceived, the material manipulation of immaterial forces opened up the possibility to predict, control and influence the consciousness of human beings – a field that had been pioneered by advertising at the time (see Vöhringer, 2007).

These considerations raise possibilities and issues that surfaced again in contemporary architectural debates:

Gernot Böhme re-thematised the idea of "materialized energy" under the heading of "atmospheres", which he sees as the fundamental concept of a new aesthetics in architecture. Questioning the primacy of vision, Böhme asks, "Is seeing really the truest means of perceiving architecture? Do we not feel it even more? And what does architecture actually shape – matter or should we say space?" (2002: 399) Böhme points to the architecture of Herzog & de Meuron, whose works build upon material experimentation based on an intuitive treatment of materials rather than a purely pragmatic approach. For Böhme, atmospheres stage human activities in relation to the surrounding world – including their environment, other people, objects, architecture and art. Atmospheres are "the shared reality of the perceiving and the perceived" (2013: 34).

Considerations of our relationship with atmosphere and weather have informed contemporary projects, which deploy materials as mediators or activating agents that probe the relationship between audience/user and the physical environment: spatial investigations with phenomena-producing materials such as water, light, colour and temperature experiment with the viewer's experience in Olaf Eliasson's works. Digital technologies have given rise to responsive materials which are fluid and evocative rather than solid and permanent – in Lars Spuybroek's *HtwoOexpo* museum, real-time electronic sensors respond to users and alter the atmosphere of the building. And Diller and Scofidio's *Blur Pavilion* proposes a "macro-atmospheric installation" and "immersive climatic sculpture" (Sloterdijk 2004: 669-670) that technologically re-creates the experience of nature as spectacle - in Sloterdijk's opinion, a project whose relevance rests in its experimentation with the commodification of air rather than in its aesthetic imagery.

Along with atmospherically-inspired experiments, traditional materials such as timber, stone and concrete were re-imagined in contemporary architecture. With the appropriation of forgotten methods, Kengo Kuma's *Nasu Stone Museum* and Peter Zumthor's *Bruder Klaus Field Chapel* connect us to the material traditions of historic architecture. In contrast, Australian architect Glenn Murcutt's use of low-cost industrial materials such as corrugated metal and cement sheets fuses the beach house, the wool-shed and industrial estates. His amalgamation of Australian vernacular with international modernism educes trans-historical, cross-cultural and climatic associations.

Architectural experiments in material-oriented computational design explore the design potential of conventional construction materials. The structural limits of bent plywood, vaulted stone and other materials are tested in parametrically-designed proto-type pavilions generating new aesthetic languages of gradient

and sinuosity. In contrast, waste materials and natural materials are broken up and fused chemically, providing imaginative new composites with changed material and aesthetic properties, suitable for an extended variety of applications. Here, the traditional material aesthetic, based on inherent natural qualities such as grain, surface texture and colouration, gives way to an abstract aesthetic that rejects discrete material qualities in favour of guaranteed qualities, homogeneity and economic necessity (see Böhme 2013: 58).

In contemporary art, Nicolas Bourriaud observed a tendency amongst groups of contemporary artists to use materials that had already been informed by other uses: British artist Liam Gillick favours materials and architectural elements that reference the universal modernism favoured in corporate architecture where "plexiglas, steel, cables, treated wood, and coloured aluminium" connect "the project of emancipation of the avant-gardes and the protocol of our alienation in a modern economy" (Bourriaud 2002: 58); these material fragments prompt the viewer to reflect on a range of, at times conflicting, environments, which can be read "as partial images that call to mind a range of other moments and environments" (Verhagen 2009: 52). It is precisely this "calling to mind of other moments and environments" that Philip Ursprung detects in Hans Danuser's photographic representations of Peter Zumthor's architecture. Danuser's images evoke seemingly incompatible associations by revealing unexpected links between Zumthor's atmospheric concrete spaces and the problematic, post-industrial spaces of Alpine power plants and cooling towers, Ursprung argues (2011).

All these endeavours probe multiple boundaries – between material and immaterial, art and science, practice and theory, representation and experience, referent and original, producers and users, giving rise to the following concerns: what is the validity of different approaches to materiality in relation to the vital problems of our time such as digital fabrication? Where do materials allow us to cross disciplinary, cultural, or political boundaries? Which trans-historical correspondences can be detected in contemporary approaches to materiality, and how do these challenge, imitate and expand on previous thinking?

To open the discussion, the first two contributions explore the theme of materiality in art and architecture with the detailed analysis of two exhibition environments. Although both represent attempts to direct user behaviour and experiences, they do so in quite different ways: in his paper *Ambient Atmospheres: Exhibiting the immaterial in works by Italian Rationalists Edoardo Persico and Franco Albini*, Ross Jenner offers a detailed analysis of the interplay between materiality and medium, mergence and emergence, and mass and space in the work of Italian Rationalists, Edoardo Persico and Franco Albini. Their 1930s exhibition settings, Jenner argues, involved activations and relations of and within space that anticipated the sort of atmospheres and scene settings Gernot Böhme proposes today. Sandra Karina Löschke examines the curatorial ethos of Alexander Dorner, director of the *Provinzialmuseum Hanover* in the early 1920s. In his stage-managed environments, she identifies a material dialectic intended to promote empathy and immersion whilst simultaneously encouraging active reception and awareness of reality. In transfiguring the interrelations between audience and art work, Dorner's strategies marked a turning point in museal practice from the representation of art works to the mediation of culture, she suggests.

Fig. 2 (opposite page) Prototype Timber Façade System, recycled timber blocks.
UTS Materiality Lab III, 2013.

The next pair of contributions probes the theme of materiality in the work of two eminent artists – Kurt Schwitters and Cildo Meireles. Both explored the interface between architecture and art, looking to everyday materials to inform their practice by using them as referents and as concepts. Abigail McEwen investigates the use of everyday materials in the work of Cildo Meireles between 1968 and 1970. The latent materiality of Meireles's earliest conceptual work is often overlooked, she argues. The reality check provided by his highly diverse material referents – architecture, consumer goods, living organisms – decisively supported his utopian aspirations, which developed against the background of Brazil's military dictatorship. Matthew Mindrup presents a comparative analysis of two distinct material practices that emerged during the early period of Weimar Germany, one by artist Kurt Schwitters, and the other by two members of the *Arbeitsrat der Kunst* – Walter Gropius and Bruno Taut. Schwitters' building materials were objects that had already been informed by other uses – found materials that he transfigured into conceptual elements for architectural prototypes, Mindrup observes. Drawing inspiration from the material elements to inform his design, Schwitters' inventive pragmatism stood in contrast to the more conventional material practices of his peers.

Concluding the refereed section are two contributions that explore how notions of materiality inform architectural design and fabrication processes and basic elements of architectural language. Looking to present issues emerging from architecture and digital fabrication, Cathy Smith develops the theme of materiality through the lens of the division of labour. Arguing that the significance of socio-political issues embedded within contemporary architectural practices is largely neglected, she addresses how new methodologies might challenge established assumptions about materials and the organisation of labour. Mario Botta's *Watari-um Museum of Contemporary Art in Tokyo* (1985-1990) is the main object of discussion in Ashley Paine's investigation of stripes and their use as spatio-perceptual elements oscillating between materiality and immateriality.

For this issue, I have invited two contributions. The first is "The ruins of the Immaterial" by Jonathan Hill, which identifies a new dialogue between the material and the immaterial in the eighteenth-century image of the ruin and uncovers its profound influence on contemporary architectural design. Historically, Hill argues, classical antiquity associated the material with temporal decay and the immaterial with timeless, geometric order. But a more significant departure occurred in the early eighteenth century, when the meaning of the immaterial was transformed and expanded in ways that significantly informed subsequent centuries and the immaterial became a coproduction of nature and culture. "Staged Materiality" is the title of the second invited contribution, by Gernot Böhme. The new sensibility for materiality prevalent in current design and architecture calls for the theatrical, he observes. Materiality is supposed to show itself, to come forward, to help shape the atmospheres in which we live. Material and materiality, in his view, thus part ways as do the processes of making and perception.

With contributions from the professions of architecture, art history and aesthetics, *Immaterial Materialities* examines some of the issues and potentials of contemporary art and architecture in the light of materiality and interactivity. This topic is addressed in a variety of ways, reflecting the interests and expertise of the authors. Many of the ideas and positions represented in this volume have been developed throughout the discussions and debates that took place during the *Interstices Symposium 2012*, which preceded this issue. I would like to express my

gratitude to the participants, the audience and particularly our keynote speakers Jonathan Hill and Philip Ursprung for their tireless engagement and their inspiration throughout the event.

And finally, this issue would not have been possible without Tina Engels-Schwarzpaul and Ross Jenner who have generously supported this issue with their wisdom and unwavering commitment.

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Refereed papers

Ambient atmospheres: Exhibiting the immaterial in works by Italian Rationalists Edoardo Persico and Franco Albini

Ross Jenner

The (im)materiality of space

Ideas of "immateriality" in architectural modernity arose together with those of "space", the relation of immateriality/materiality paralleling that of space/mass. This pairing of matter with that "most immaterial of properties – 'space'" seems constitutive of modernity (Forty 2000: 256; see also Solà-Morales 1996: 93-95). Also generated in discourse around the beginning of the last century were notions such as atmosphere, ambience, envelopment, surroundings, context, environment, milieu, medium, habitat and setting.

Already in 1873, the philosopher Robert Vischer observed how a dreaming body "unconsciously projects its own bodily form – and with this also the soul – into the form of the object". On this, he based his notion of (empathy) *Einfühlung* (1994: 92). Twenty years later, the art historian, August Schmarsow, who extended empathy from solids to void, was probably the first to treat bodily experience as central (1994: 286-87). That same year, 1893, the sculptor Adolf Hildebrand proposed space as continuity: "as a body of water", in which individual solids are immersed (1918: 28-29) – anticipating both Paul Valéry's understanding of architecture (as being "inside a work of man as fishes are in the sea, being entirely immersed in it, living in it, and belonging to it", 1960 (1921): 102) and Peter Sloterdijk's notion of immersion, which embraces Valéry's (Sloterdijk 2011: 106-109). Wishing to render space visible, Hildebrand implied that a void is not externally limited but "internally animated", and that "the boundary of an object is, strictly speaking, also the boundary of the body of air surrounding it" (1918: 239).

I examine here an atmospheric spatiality, an artistic set-up involving immersion, activation and relation within space. Such *space* as *felt*, in mood and affect, is, I will demonstrate, found in the works of Italian rationalists, Franco Albini and Edoardo Persico (his friend and mentor). In his exhibition and installation works, Albini developed *felt space* into one of relationships. Its appearance can be taken as an adumbration of the sort of atmospheres and scene settings Gernot Böhme proposes today. In Persico and Albini's works, the wish to make space visible emerges in two allied strategies, which focus this paper. First, showing space as a medium, or atmosphere – that is, making the immaterial material and establishing a blurring between substance and medium, mergence and emergence. Second, establishing a rapport or interplay, often by linear means, or a flickering reversal between mass and space, full and empty, present and absent, and between what is and what is not.

Atmosphere and clearing

In one sense, the first of these strategies was not new in the twentieth century. Atmosphere was, and remains, the key element in oriental art,[1] just as smokiness was valorised in the Renaissance. In the sixteenth century, Daniele Barbaro wrote of painting made with contours soft and *sfumati*, which could bring one "to understand what is not seen", to experience "a most gentle receding, a delicacy on the horizon of our sight, which both is and is not" (1556: bk. 7, cap. V). At the same

1 "Atmosphere" demands a co-presence that necessarily engulfs the terms of any subject/object division. François Jullien notes: "[u]nlike the activity of cognition, 'atmosphere' could not be conceived in terms of the opposition between the objective and subjective. It is an influence that emerges from beings and things and is valid only by virtue of the impression in us: it e-manates or im-parts and hence circulates inseparably between what is neither 'that' nor 'us' anymore, something that, as a result, cannot recede into a 'what,' not even into the 'I don't know what.' Indeed an atmosphere is diffuse, disseminated, dispersed, elusive. Its presence cannot be isolated into determinate elements, it is both sparse and undelimitable. Above all, it is not assignable. Evasive, evanescent, it can be analysed not in terms of presence or essence, but only in terms of heaviness or valence, *ex*-haling, in-fluencing, in a nonontological mode, between 'there is' – 'there is not'." (Jullien 2009: 41)

time, Giorgio Vasari wrote of parts of the body being revealed with "sweet and easy grace … between the seen and unseen" (1550: 80).

At the beginning of architectural modernity, atmosphere re-emerged as a core concern. In 1851, Mary Merrifield used the term to describe the Crystal Palace, which,

> is perhaps the only building in the world in which *atmosphere* is perceptible. … To the spectator situated in the gallery at the eastern or western end, who looks directly before himself, the most distant parts of the building appear enveloped in a bluish haze, as if it were open to the air, the warm tint of the canvas and roof contrasts with the light blue colour of the girders into which it is insensibly lost, and harmonising with the blue sky above the transept, produces an appearance so pleasing, and at the same time so natural, that it is difficult to distinguish where art begins and nature finishes. (1970 (1851))[2]

The German publicist, Lothar Bucher, similarly wrote of a fairy-like impression, in which "all materiality is blended into the atmosphere" (1851: 174). Surprisingly, Gottfried Semper, the so-called "materialist", might have been the first to theorise the word "atmosphere" architecturally when he argued, 10 years after the Great Exhibition, that,

> Every artistic creation, every artistic pleasure, presumes a certain carnival spirit, or to express it in a modern way, the haze of carnival candles is the true atmosphere of art. The destruction of reality, of the material, is necessary if form is to emerge as a meaningful symbol, as an autonomous human creation. (2004: n. 85, 438-39)

Richard Lucae, architect of the Frankfurt Opera House, described the Crystal Palace as a "piece of sculptural atmosphere" (1869) and Sigfried Giedion compared the airy, hovering and floating elements of the Crystal Palace with Turner's painting – in both, the effect was achieved "through a humid atmosphere which dematerialises the landscape and dissolves it into infinity" (1943: 191). In other words, *weather*, the condition of air in sunshine, rain, snow, or mist, renders space airlike, makes palpable the materiality of what appeared immaterial.[3]

The second strategy, the interplay between solid and void, present and absent might be termed *design by erasure* – that is, configuring the void by freeing, stripping and ridding space from solids. The word (space) *Raum* implies (clearing away) *räumen*, which "means: to rid, clear out, to free from wilderness" (Heidegger, following the Grimms' dictionary definition, 1973: 5). Heidegger explored this mode of clearing, spacing, making room and making space in an essay which accompanied lithographs by the Basque sculptor, Eduardo Chillida (see Prada 2009: 14, 16, 28, 52). In architecture, it was promoted by Adolf Loos or, even earlier, by Joseph Paxton who strove to reduce engineered structure to the minimum of mass.

Both strategies are important in two of Persico's installations, which are very much concerned with space as atmosphere and with space as the relationship between mass and space, solid and void, material and immateriality. I will now locate concepts of atmosphere as (mood) *stato d'animo* and felt space in contemporary accounts of these works. From there, I will show how Albini could develop these themes into a notion of relational space in his exhibition and installation works.

2 Jones provided a theoretical justification for the design in painterly terms: aerial perspective and Impressionist pointillism. He theorised his use of colour in the Crystal Palace using blue, red and yellow "in such relative quantities, as to neutralise or destroy each other, thus no *one* colour will be dominant or fatiguing to the eye, and all the objects will assist, and be assisted by, the colours of the building itself." (From "On the Decorations proposed for the Exhibition Building in Hyde Park" in Jones 1863: 11.) What resulted was an Impressionism/Divisionism: "The blending of the three primary colours in the roof of the nave, where the effect could be seen uninterruptedly, was most complete, and produced an artificial atmospheric effect of a most surprising kind." (From "An attempt to define the principles which should regulate the employment of colour in the decorative arts", read before the Royal Society of Arts, April 28 1852 in Jones 1863). Need one add that attention to atmosphere was, of course, already present in the Constable's "skying", Turner's atmospherics, and Ruskin's obsessions with clouds and weather in *Modern Painters*, *The Queen of the Air* and in *The Storm Cloud of the Nineteenth Century*?

3 Gernot Böhme remarks: "The term, itself, 'atmosphere', derives from meteorology and as a designation for an ambient quality has a number of synonyms that likewise connote the airy, cloudy, or indefinite: these include climate, nimbus, aura, fluid; and perhaps emanation could be counted among them as well. (Böhme 1998: 112)

On atmosphere as weather, perhaps the quintessentially British perception, see, for example: Forster 1815; John E. Thornes, 2008a and 2008b; Hamblyn 2001; Jankovic 2000; Ingold 2005, 2011 (115-135), 2012 and 2013; Connor 2010; Olwig 2011; Hill 2012. For an approach to weather acknowledging emotions, see Böhme 2003.

The Hall of the Gold Medals

Critics noted an "impressionistic sensibility" in Persico's installations in the 1930s. In the *Hall of the Gold Medals* (1934) by Persico and Nizzoli and the *Hall of Honour* (1936), "the voids have a compositional value even more alive than the solids" (Carla Albini quoted in M. Albini 2006: 207). Bruno Zevi judged *The Hall of the Gold Medals* at the Exhibition of Italian Aeronautics in the new Palazzo dell'Arte in Milan "the only true invention, and thus the only original contribution to the language of architecture produced by Italy between the two wars" (1975: 203). The work commemorated the exploits in the First World War of the Italian aviators who received the prestigious Gold Medal. In Persico's design, documents in the form of photographs and artefacts were to speak for themselves (Persico 1968: 262-263).

Anna Maria Mazzucchelli[4] described the exhibition in terms of atmosphere: "the heroes are exalted in a suggestive and moving climate" (1934: 534). Photographic panels, artefacts, and texts, mounted on a series of slender floor-to-ceiling scaffolds, created an "explosion of documents in space imbued with an unreal light; the delicate white outlines that cancel themselves out against the white of the walls, held between black ceiling and floor giving a sense of infinite horizon" (533). The uprights were laid out in strict files, implying indefinite horizontal and vertical extension. Minimally connected, they appeared to pass right through the confines of the room. The work was of utmost simplicity, but also of the utmost subtlety, putting into play a complex articulation of space. An abstract graph, for instance, was elided with a recurring figurative element: the box frame of the first bi-planes, in a spectral skeletal quality, at the threshold between oblivion and consciousness.

Persico's close associate, Giulia Veronesi, described the installation's "ineffable" colour ("colour" being an odd term since the entire installation was in black and white) and considered it "one of the purest and most transfiguring lyrical images of architecture" of its age, a work "intensely magical, in its musical accord of whites and blacks elevated in an unreal light (a blue air of luminous night) to create a dense and soft atmosphere of the mystery of death, of its distance …" (1953: 108).

4 Mazzucchelli worked under Persico and Pagano at *Casabella*. See Astarita 1998.

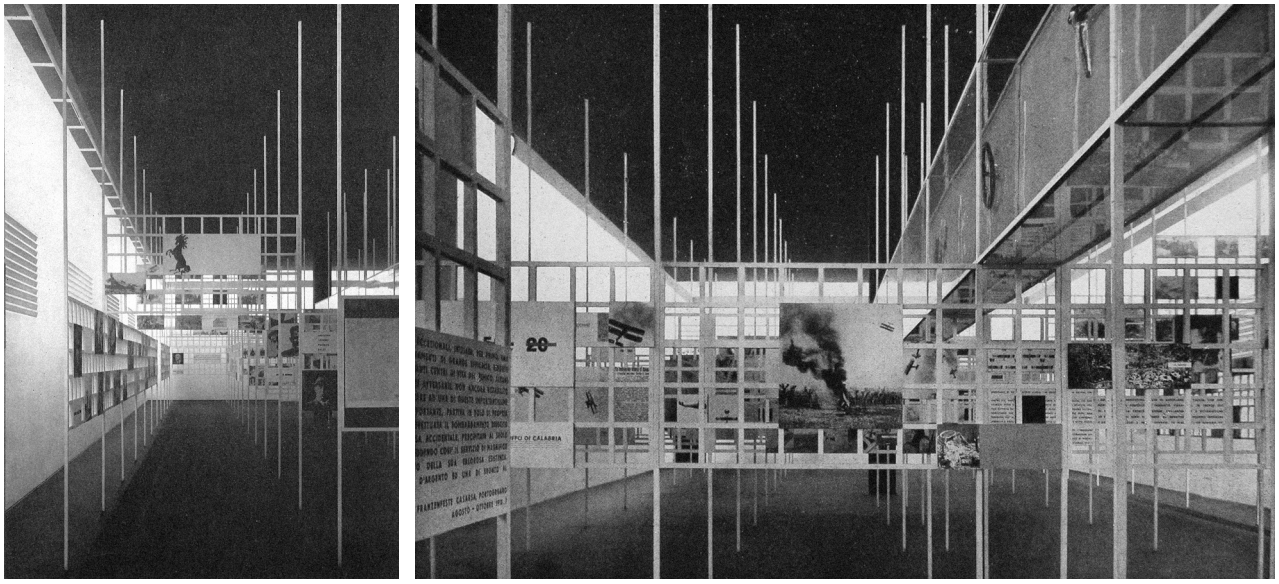

Fig. 1 (right) Edoardo Persico, Marcello Nizzoli and Lucio Fontana (1934). Hall of the Gold Medals, Palazzo dell'Arte, Milan. [*Edoardo Persico Scritti d'architettura (1927/1935)*, ed. Giulia Veronesi, Vallecchi Edittore, Florence, 1968:193]

Fig. 2 (left) Edoardo Persico, Marcello Nizzoli and Lucio Fontana (1934). Hall of the Gold Medals, Palazzo dell'Arte, Milan. [*Edoardo Persico: Tutte le opere*, ed. Giulia Veronesi, vol. 2. Edizioni di Comunità, Milan, 1964:178]

The Hall of Honour

The 1936 Milan Triennale culminated in Persico's last design, the *Hall of Honour*. Again, the design was perceived as a suspended atmospheric environment, the space of intercolumniation being its principal motif. The visitor was forced to filter through a narrow corridor between the lines of off-set panels to gain entry. Within was a space suffused with light, where, on pedestals, stood the statue of a goddess with two horses.

Again, the impact was of black and white. An "orgy of white, absolute white" is how Peter Meyer, Swiss editor of *Das Werk*, described it (1936: 314). Italian critic, Raffaello Giolli experienced atmosphere, immersion and loss of weight: his visitor is suddenly "engulfed by an unexpected atmosphere, in a moment, as if entering a painting or a poem: a lyrical moment". It is the "unexpected immersion in white that instantly makes us lose all sense of weight and all normal gauge of measure, carrying us into a fervent play of light" (1936: 14).[5] The second effect was of blackness: the background of the installation was a black box, the blackened out walls of the hall in the Palazzo dell'Arte which housed it (Meyer 1936: 314).

A scenographic quality, reminiscent of De Chirico in its openly bared illusionism, was reinforced by the rows of off-set screens, producing the effect of continuous closure, from within and from without, but the air passed right through them. Giolli wrote of the screens' "breathing richness" creating "an unreal belt and a curtain of light". Their doubling immediately created an unexpected dynamic. Another occurred when looking at the more distant planes, which "seem to be repeated in an hallucinating mirroring of themselves". Their flickering rhythm "opens and reopens continuously and amazingly" (1936: 18).

It is this filtering process that stirs the air and confounds perception. Giolli found that "the exuberant scale" of the room forced one "to look upward, to find air there" (19). The narrow white walls were "like very rapid beats" that made one feel "as if a game, where one's life is at stake, were played" which forced one "to sudden ascents, to improbable climbs, and to all prominent points" (19). Seeming to return to the etymology of the Greek *peripteron*, with its image of feathers, he continued:

> They are like a fluttering of wings: thin pilasters which seem to detach themselves from the wall to vibrate alone. Seeing them in a row, it is as if the equal tempo that separates them were frenetically accelerated: the

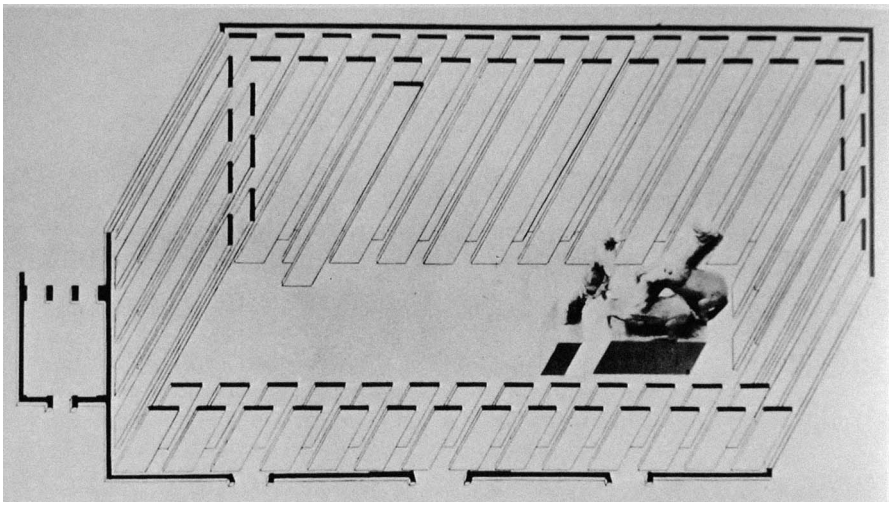

Fig. 3 Edoardo Persico, Marcello Nizzoli and Lucio Fontana (1936). Hall of Honour, Palazzo dell'Arte, Milan. Axonometric from competition board. [*Edoardo Persico Scritti d'architettura (1927/1935)*, ed. Giulia Veronesi, Vallecchi Edittore, Florence, 1968: 196]

5 An antifascist, Giolli wrote for clandestine newspapers. On 14 September 1944, he was arrested with his wife and son, was tortured and taken to the prison of S. Vittore in Milan, then deported to Mauthausen, in Austria, where he died at the camp of Gusen 2 on the night of 5 or 6 January 1945.

Fig. 4 (left) Edoardo Persico, Marcello Nizzoli and Lucio Fontana (1936). Hall of Honour, Palazzo dell'Arte. [*Edoardo Persico: Tutte le opere,* ed. Giulia Veronesi, vol. 2. Edizioni di Comunità, Milan, 1964: 150]

Fig. 5 (above) Lucio Fontana (1936). Hall of Honour. [*Edoardo Persico: Tutte le opere*, ed. Giulia Veronesi, vol. 2. Edizioni di Comunità, Milan, 1964: 151]

> beats became ever more rapid, disquieting. As when everyone clap their hands around a dancer with an ever quickening beat that gets into the blood to the point of dizziness. (19)

He compared the screens to the colonnades of Greek temples: "They were like a magic belt around the sacred hall", creating "an intermediate atmosphere, imprisoning the air [...] a band of secret atmosphere that went around the closed little rectangle, an isolation belt" (18). They let the air pass "as if through a grill" (18) that serves as a passage from black to white, from empty to full.

Filtering through the "constant frenetic appearing of these excited white screens", Giolli sought "breathing space and peace", finding it only when "suddenly two large horizontal planes appear, one down low, the other high up; matching, parallel, gliding, launched as if in flight": the floor and ceiling. The full volume of the interior is now gained. One has moved from the trembling rhythmic verticality of the periphery to the gliding central space, where the screens now appear to hold the dark planes of floor and ceiling together. Giolli found this counterpoint even more subtle and daring than that between black and white: the two planes "overturn the first pattern: where before black was associated with the perpendicular, now airy planes come alive suspended in the light".

In this enchanted island, island of dream, everything becomes unreal, different in weight, mood, and dimensions. The white figures sculpted by Lucio Fontana also appear as white apparitions, looming out from behind the scenes made of light, born in that world (1936: 20).

The goddess leads the horses, unharnessed and tamed. The elongation of the sculptures matches that of the screens, as the figure's fingers, "vibrating, breathing, most beautiful" (Ponti 1936: 6; see also, Curtis 2008: 28-41) match their vibrating, their breathing.[6]

Something in the work's conception escapes the viewer. Perceptual breakdown points to something beyond perception: the brink of consciousness. The exhibition has no entrance but remains all threshold. One experiences an event without actualisation: only a presage. What is intimated is the possibility of space, at the threshold between being and non-being, as atmosphere and clearing.

Aerated diagrams: Albini's Hall of Aerodynamics

Albini's contribution to the Exhibition of Italian Aeronautics consisted of an *Aerodynamics* section, the most scientific and didactic of the show, dealing with fundamental principles of the movement and up-lift of bodies in air. His design made the laws of aerodynamics visible and accessible.[7] On a screen of square frames with mesh running along the centre of the room, diagrams represented specific characteristics of aerodynamic profiles, details, microphotographs and installations of experimental laboratories. Four large graphs on mesh set transversally at intervals along the length of the hall displayed the curvatures of four characteristic types of plane. Currents of smoke generated in the wind tunnel were shown by stroboscope in a corner of the hall as aerodynamic phenomena related to the form of the envelope and movement of propulsion.

On approaching Albini's section of the exhibition, visitors saw screens of floor-to-ceiling grids in white painted steel mesh simultaneously at first, five deep with an arabesque of diagrams, vibrating in moiré through superimposition. On

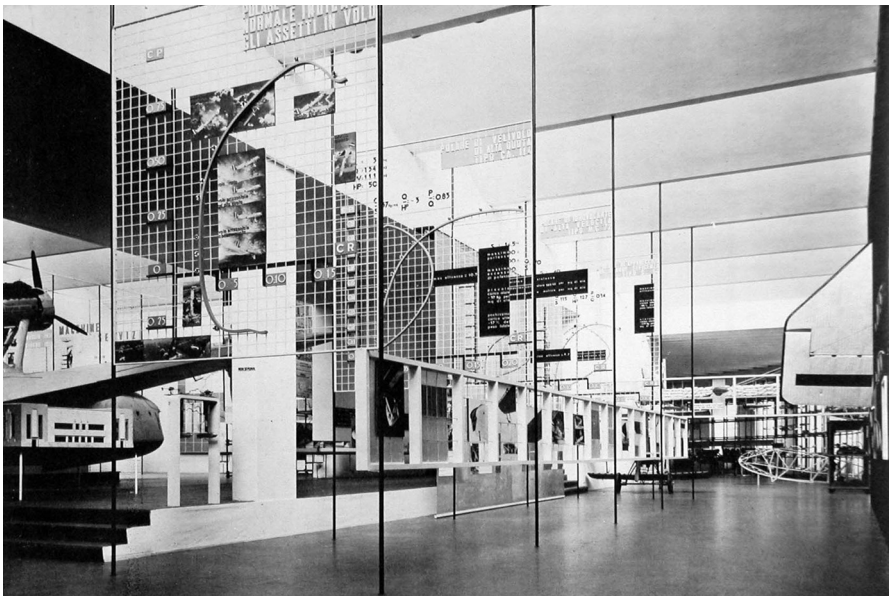

Fig. 6 Franco Albini (1934). Hall of Aerodynamics, Exhibition of Italian Aeronautics, Milan, Palazzo dell'Arte [Courtesy Fondazione Franco Albini]

6 Commenting on the effects of vertical drapery in sculpture, Bachelard notes: "We can never spend too much time meditating on the expression *an elongated form*, which is an image in which formal and material imagination intersect. [...] an *elongated form* is a *formal élan* [...] It is to be noted that any elongated form reaches out towards the heights, towards light. The *elongated form* is a *formal élan* that unfolds in pure, luminous air. We could not conceive of an elongated form going downward, suggesting a fall. That would be in the realm of the imagination – aerodynamically absurd." (Bachelard 1988: 76)

7 The comparison with Le Corbusier's treatment of the same material a year later in his *Aircraft* (illustrations 50, 51, 52) is instructive: there the technology of flight, aerodynamics, is nowhere explained.

advancing, they appeared sequentially; to their right, images and skeletal sections were mounted on wiry uprights, detached from the wall, an open horizontal ladder-form, on its side, but vertical and suspended longitudinally through the hall, led to a background of open scaffolding. These elements together, interwoven as discrete lines, tones and hues, dilated the space imbuing it with the quality of *plein air*. Marcello Fagiolo observes of the exhibition in general that "an inversion of traditional values was presented: the aeroplane-objects were for the most part static, dark and yet exhibited in fragments ... while paradoxically the structures exhibited were to free themselves and levitate in an oneiric sky" (1981: 38).

The aerodynamics hall combined graphic intensity with spatial dispersion. The metallic cages, struts and fragile supports dissolved finite contours into atmosphere. It was an atmosphere fabricated of structure, passing from the diagrammatic structures of air to an aerial structure. The exhibit's content, the flow and disturbance of air (delimiting by filaments the rational principles of this unbounded, fickle, and invisible medium) became the vehicle for the creation of a space of that very medium. Air was the subject, air the effect, air the medium – sober objectivity was carried to shimmering evanescence.

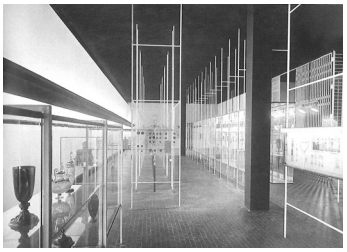

Fig. 7 Franco Albini (1935). Interior of Permanent INA Pavilion, Milan Trade Fair [Courtesy Fondazione Franco Albini]

Fig. 8 Franco Albini and Giovanni Romano (1936). Antique Gold Work Exhibition, Milan Triennale, Palazzo dell'Arte, Milan [Courtesy Fondazione Franco Albini]

Fig. 9 Franco Albini (1941). Albini Apartment, Via de Togni, Milan [Courtesy Fondazione Franco Albini]

Atmospheric spaces

In 1942, Albini wrote of an "aesthetic of modernity" which is made of "a maximum lightness of densities (*spessori*), an extreme fluidity of forms, an almost unconditioned overcoming of the sense of volume and weight" (1942: 12-13). These airy qualities were introduced in Futurism as early as Prampolini's notion of "atmospheric densities" in his Futurist 'Atmosphere-structure'.[8] Albini's installations from 1935 to 1960, however, 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 that of solid materials. A colleague, discussing Albini's apartment in Milan, emphasised an "essentially spatial" expression, repeatedly using the phrase "atmospheric spaces (*spazi atmosferici*)" to characterise its rooms, "delimited ideally even just by hints" (Romano 1941: 14). Such works are the legacy of Impressionism and the spatial interpenetration of Crystal Palace. They make atmosphere perceptible as a poet might speak of the ineffable.

Albini's expression of void space involved structural cages and grids, the detachment of elements expressed paratactically, with a minimum of touching, as splits and "negative" details through which air passed, as well as the hygienist tradition of fresh air and light. These conceptions of space are augmented later by the sensation of "plunging into the air" in the *Living Room in a Villa*, and of being out in the open, achieved through the penetration of the light and air between gaps, grilles, frames, screens. All this, in combination with the lifting up of elements in compositional play by the lightest of supports, suggests an aerial quality. Carla Zanini related the *Living Room in a Villa* to three factors: first, certain expressions of abstract art, for which she employs the term (aerial composition), *composizione aerea*; secondly, an "Impressionist sensibility"; and thirdly, a "desire for fusion with nature" (1941: 34).[9]

This aerial ambience is, unfortunately, largely lost in the black and white images of Albini's works that remain today. As Veronesi cautioned with regard to Persico's *Sala delle medaglie d'oro*, "the photographs allow us to grasp only the linear schema" (1953: 108). More evident, in many of Albini's pre-war works, is their dependence on a system of spatial co-ordinates, grids and frames so typical of

8 Prampolini proposed a "Futurist 'Atmosphere-structure' – Basis for an Architecture 1914-15" (Apollonio 1973: 181-183) see also Crispolti 1984: 14, and Godoli 1997: 1-3. He aimed to create new architectural forms by materialising "atmospheric dynamism" through human activities see Lista 2001: 172-73.

9 Zanini makes reference here to Persico's Turin lecture, "Prophecy of Architecture" with its derivation of modern architecture from Impressionism rather than, as Lionello Venturi maintained, from Cubism (Zanini 1941: 34).

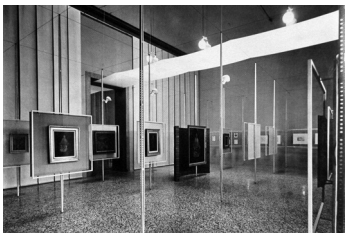

Fig. 10 Franco Albini (1941). Scipione & Black and White Exhibition, Pinacoteca di Brera, Milan. Props and frames define erased walls, suspended paper a route [Courtesy Fondazione Franco Albini]

Neo-Plasticism and Italian Rationalism. Together with the airy ambience described by reviewers, they were a product of both a linear, graphic conception *and* painterly atmosphere – abstraction *and* impressionism. Carla Albini described her brother's work in 1943 as representative of a tendency in which "the experience of a linear abstraction, subtle to the point of graphism, is animated by contact with an atmospheric sensibility, which uses spatial values more than true and proper building values" (quoted in Albini 2006: 207-08).

Even apparent emptiness produces atmosphere. Fulvio Irace writes that it was "perhaps the metaphysical vein of the Italian vocation to abstraction, as Zeno Birolli observed that was expressed in the notion of *spazio vuoto* (empty space) wherein to make float the 'plastic solitude' of a new world of objects" (2006: 20).[10] In the rationality, common sense or plain banality of domestic space, Albini stages a secret spirituality, close to the idealism of Franco Ciliberti's *Valori Primordiali*, to which it would not have been foreign. Here then the double nature of his work re-emerges. The objects dematerialise, their constructive character dissolving into light and colour. This aspect of Albini's architecture, which his sister termed "chromaticism", was not simply a decorative value but in her words an "architectural principle", so that (as Veronesi before her had found blue in black and white) she regarded even his monochromatic *Mostra di Scipione & Black and White*, 1941, as "resolved on the chromatic level. Architecture of air and in this sense exactly the most coherent representation of this taste to which Persico pointed" (quoted in Albini 2006: 208).

Acclimatising: The space of relation

In a lecture, "My experience as architect in exhibitions in Italy and abroad" (1954-55), Albini described an exhibition in São Paolo, whose spaces were defined by semi-transparent screens, where "the successive transparencies, on the opaque grid of the structure of frames, stamped a vibration which could be felt on the air and light" (2006: 77). After the war, the dissolution of architecture into air, light and "colour" in his exhibition and installation works became subsumed into his museum design. Here, in their moods and affects, atmosphere developed into the very conditions of the exhibits' appearing.

In another lecture, "The functions and architecture of the museum: some experiences" (1954-55), Albini himself proposed it was only in the post-war period that architecture sought relationships with the works exhibited and with the public.[11] A new function was born: that of promoting public contemplation of the art work "in its essentially aesthetic values" (2006: 72). This new function, Albini suggested, found its architectural expression in *ambientamento*, an almost untranslatable word which implies acclimatising, setting, settling in, giving an ambience or environment to something. In these pioneering ideas, Albini and his colleague Carlo Scarpa proceeded apace. The concept of (setting) *ambientare* brought the visitor "closer to the artwork through a language consistent with his sensibility" (72). Albini continued, "Architecture creates a modern atmosphere around the visitor and precisely because of this enters into rapport with his sensibility, culture, and mentality as modern man. [...] architecture provides precisely the first captivation of the work of art" (72).

Albini noted that, for a successful and interesting exhibition, it is sometimes fundamentally important to detach the visitor from the reality outside and thus to "introduce (an ambience of a particular atmosphere) *un ambiente di atmosfera particolare* helping him concentrate attention on the works exhibited and making his

10 Irace refers to Birolli 1983: 124

11 By contrast, as Labò noted on the occasion of its 90th anniversary, at Crystal Palace, "[t]he object is of value only for its presence; and no one sees that the setting, the breath, can enhance vitality." (1941: 9)

feeling acute" (76). Thus what he calls "the exhibition invention" should attract the visitor in its play, arousing "atmosphere around the works most adapted to valorise them yet without ever overwhelming them" (76). Going further, he argued that "to make the ambience a potent element of suggestion", one must have recourse to spatial rather than plastic, that is to say, solid solutions: "it is precisely the voids that must build, air and light being the building materials. The atmosphere must not be fixed or stagnant but pulsate and the public must find itself immersed here and stimulated without noticing it (76)."

To perceive space is first to perceive a hitherto unnoticed medium, gap or void. This perception involves overturning of attention. The call to and recognition of space, as opposed to objects and things in themselves, is the aesthetic moment, *par excellence*. It is the recognition of space as a space of relationships, whose material co-relative, or "embodiment", is air. On the conjunction of art and space in Chillida's sculpture and Heidegger's philosophy, Andrew Mitchell writes that both,

> ...seek a space that would no longer be void but would be traversed by tension and the vibration of form, a space permeated by the things

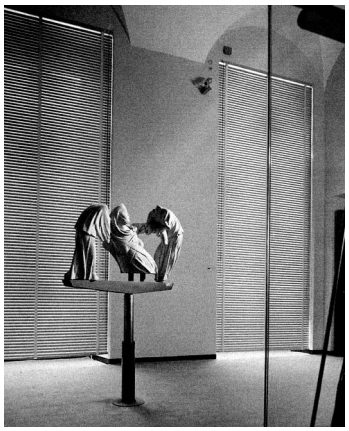

Fig. 11 (left) Franco Albini & Franca Helg (1949-51). Palazzo Bianco, setting with interactive mounting for Margaret of Brabant Group. [Courtesy Fondazione Franco Albini]

Fig. 12 (above) Franco Albini & Franca Helg (1949-51). Palazzo Bianco: Apollo and Venus with polychrome Roman Head [Courtesy Fondazione Franco Albini]

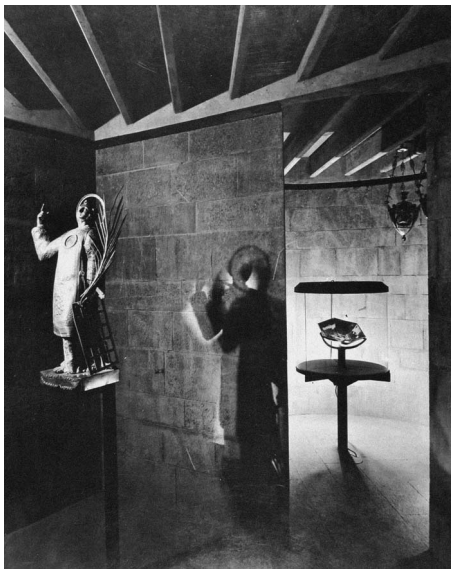

Fig. 13 (left) Franco Albini & Franca Helg (1952-56). Museum of the Treasury of San Lorenzo, Genova [Courtesy Fondazione Franco Albini]

Fig. 14 (right) Franco Albini & Franca Helg (1952-56). Museum of the Treasury of San Lorenzo, Genova. The sculpture of St Laurence, its shadow and the shattered hexagonal plate beyond, once taken to have been the Holy Grail, now presented as radio telescope [Courtesy Fondazione Franco Albini]

> that take place throughout it, a poetic space of relation accomplished through the incorporation of space into the sculpture and the incorporation of sculpture into space (2010: 69).

Here the making of sculpture involves a spacing-apart where a relation between the separated parties persists. Thus, spacing is "a way of thinking this connectivity of things in the world" and "the admission into space is a giving of the thing to relation" (2010: 70). Heidegger's essay went a long way towards thinking the conjunction between the plastic arts and space. One thing, however, seems missing in his account – persons perceiving the work, if there are any, are not in the presence of their own bodies. For all the attention to place, region and context, subjective involvement with sculpture and location leaves no trace on Heidegger's conception of that conjunction: the perceiver remains unaffected. To recognise the subjective would be to consider that, as Böhme reminds us, atmosphere is a,

> … fundamental fact of human perception, that is, the perception through which man senses in his (condition) *Befinden* simultaneously (where he is located) *wo er sich befindet*. Seen this way, atmospheres are something that define the human being-in-the-world as a whole, i.e. his relationship to environments, to other people, to things and works of art. (2006: 105)[12]

In architecture, as Böhme writes, "it is never only a matter of giving form to an object, but always of creating at the same time the conditions of its appearing" (2000: 98).

The fame of Italy's post-war museums and exhibitions is in large measure attributable to Albini and his colleagues as protagonists of the conception and making of these settings. Albini's notion of space as *rapport* is an attuning, an acclimatising, of the body to the works exhibited, focusing and interpreting them through an "*ambiente di atmosfera particolare* (ambience of a particular atmosphere)" (2006: 76). Such an aesthetics of atmosphere refocuses attention that was previously (and is still today) distorted by an ontology oriented to the thing and reconfirms a different orientation: "the object and goal of aesthetic work is literally nothing; i.e. that which lies 'between' – the space" (Böhme 1998: 115).

12 Trans. A-Chr. Engels-Schwarzpaul.

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Material aesthetics and agency: Alexander Dorner and the stage-managed museum

Sandra Karina Löschke

> I intended to show that there are much more profound forces of change at work in life, which unite past and present in a much intenser way, than we are accustomed to see. This wholly relative, wholly dynamic interpenetrative history has a new power to direct us. History indeed is able to tap a substratum of positive, new – and badly needed – energies for our conduct of all life, artistic and otherwise. (Dorner 1958: 18)

At stake for the museum in the early 1920s, Alexander Dorner suggested, was much more than art historical erudition and connoisseurship but the adequate resolution of the only thing that mattered – "ourselves and our vital problems" (1958: 147). The purpose of the museum was to aid the improvement of self-awareness and a deeper understanding of the present situation, he insisted, and this could only be accomplished if "the energies that, surging up from the past, have invaded our own lives" (147) were uncovered. It was apparent to him that the museum would have to utilise "all possible sensory and intellectual resources of representation" (146) to achieve this aim.

The particular challenge identified by Dorner appeared to be one of method – how could historical and cultural content be mediated adequately in order to become relevant for the present? Something beyond scientific organisation and representation was at issue – something that materialised immaterial energies that lay dormant in our cultural heritage and that, once activated, had the capacity to improve human life and facilitate social progress. It is Dorner's own curatorial response to these challenges that is under investigation in this study, which focuses on Dorner's reorganisation of the collections at the Provinzialmuseum Hannover during the 1920s.

Dorner's grouping of period works in discrete *Atmosphärenräume* (atmosphere rooms)[1] and the introduction of an evolutionary itinerary have been considered conventional and comparable to earlier reorganisation efforts (Flacke 1993: 137; Klonk 2009: 94; Scholl 1995). Similarly, his concurrent deployment of atmospheric immersion and an evolutionary itinerary have been seen as incompatible and a grave inconsistency in his curatorial approach: on one hand, the audience's identification with an epoch precludes the possibility of a continuous consciousness – the viewer is expected to empathise; on the other hand, it is precisely the cognition of a historic continuity that is evoked with the realisation of a concept of historic development (Flacke-Knoch 1986/87: 137).

Counter to these arguments, this study suggests that it is possible to attain a more nuanced reading of Dorner's strategies by pursuing a detailed analysis of elements of his curatorial practice – in particular, central display elements such as the use of wall colour and reframing. When unravelled in relation to his museum guidebooks and other information material, his practice emerges as a calculated staging of intellectual insights and sensory impressions. However subtle, Dorner's strategies marked a turning point in the presentation of artworks in museums by going beyond issues of representation and taste that governed the work of his peers.[2] His stage-managed environments transformed the way the audience interrelated

1 Dorner used the term *atmosphere room* to describe the grouping of artworks from historic periods/styles in discrete rooms. Unlike period rooms, these were not stylistically homogenous. They were given an identity through colourful appointment and fitted with modern furniture and everyday objects to reflect the self-understanding and spatial conceptions of their respective time as seen from a present perspective. See Dorner 1924.

2 For a discussion of Dorner's curatorial work in the wider context of other museum re-organisations see Scholl 1995; Flacke 1993.

with the art objects presented to them – a material dialectic intended to promote empathy and immersion whilst simultaneously encouraging active reception and awareness of reality.

The state of German museums in the early 1920s: Excess and disorientation

Having spent his early years at the Provinzialmuseum cataloguing the drawing and painting collections as a research assistant, Dorner had formed a comprehensive idea about the museum's holdings when he began to restructure the collections and gallery spaces of the Provinzialmuseum in 1923. At the time, the collections were still in a state of disarray. More reminiscent of a curiosity cabinet than an art collection, the Provinzialmuseum was described by staff as a "trash room" (Flacke 1992: 51) where one could find an altar next to a stuffed boar and a painting. The museum's "high walls", as Dorner later observed, "threatened to collapse under the load of the good and the bad" (Katenhusen 1993: 71).

As a consequence of complex ownership structures and loan agreements (see Cauman 1958: 30-31), the Provinzialmuseum functioned essentially as a depository for an array of diverse objects that were exhibited as singular items without meaningful interrelations – a "loose aggregate", as Dorner termed it (1958: 16).[3] Visitors found themselves not only overwhelmed by the plethora of objects on display, but also entirely left to their own devices in engaging in a meaningful way with the diverse exhibits they had encountered.

The situation in Hannover was symptomatic of the wider museum landscape at the time that was caught between tradition and rapid change (Mai 2010: 365). Museum reform efforts had already commenced in the 1880s (Joachimides 2001), but in the more radicalised political climate of the early Weimar republic, the call for "the activation of museums as educational establishments for the people" (Taut 1918) grew louder. The museum, increasingly regarded as a predominantly educational institution, had to leave behind its passive position and engage in what Dorner described as an active museum practice, whose primary goal was to find new ways to evaluate art collections for the general public – ways that would make art historical developments not only visible but comprehensible (see Dorner 1924). This active practice meant a shift of attention from the representation of objects to the mediation of ideas inherent in these objects.

Dorner's *Raumbild* concept

According to Dorner, art and culture were primarily manifestations of the prevalent historic conceptions of space and thus represented immediate expressions of how people conceived of themselves as being in space and time, and in relation to objects and one another. Thus for Dorner, the history of art and architecture mapped the history of human relations to space and materialised the image of self that was formed in relation to it. Thematised under the heading of *Raumbild*,[4] the idea of historically evolving space-time relations was highly implicated in Dorner's curatorial work. Literally translated as both *spatialised image* and *image of space*, the notion of *Raumbild* resides between object and image, between the perceived and the imagined, between the material and the immaterial. In the same way that a *Raumbild* could be articulated in an artwork, its underlying concept could also be rematerialised as part of the exhibition room. The *Raumbild's* fluctuation between image and space can be seen as the enabling assumption for Dorner's curatorial practice.

3 Owners often insisted on the separate display of their collections. They often resisted the relegation of qualitatively less valuable works to "study collections" forcing museums to display the entire collection. See Alexander Dorner's proposal for a re-organisation of the Duke of Cumberland's collections, dated 3 April 1923. (Niedersachsisches Landersarchiv: Hann.152 ACC. 2006/013 Nr.1)

4 In the English-language publication of his book *The way beyond 'art'*, which summarises his life's work both as an art historian and as a museum director, Dorner described the idea of *Raumbild* more loosely as "reality concept" (1958: 17).

Dorner's concern with changing and increasingly dynamic concepts of space can be traced throughout his writings, in which he developed an extensive vocabulary around this theme. In his 1923 publication *Die Romanische Baukunst in Sachsen und Westfalen (Roman Architecture in Saxony and Westphalia)*, the changing interrelations between *Baukörper* (built object), and *Raum* (space) towards their equilibrium in the concept of *Raumbau* (space building) were explored as the decisive aspect in the transition from the Roman to the Gothic *Raumbild*. The accentuation of the built object customary in Roman art, Dorner noted, was reversed in Westphalian Gothic where space assumed an all-embracing unity and "the built object recede[d] into the background as subservient" (1923: 9). This shift in emphasis from object to space was paralleled in the sensory impressions imparted by the architecture – the sense of "expansion and calm" apparent in Roman architecture was replaced with "intensity and movement" in Gothic architecture (8).[5]

Dorner's correlation of spatial and empathic conditions is not new and can be linked to his self-confessed partisanship of Alois Riegl – an enthusiasm he developed during his studies in Berlin under Adolph Goldschmidt (Dorner 1958: 15). In a series of lectures on the origins of Baroque art in Rome, Riegl had advanced a parallelism between *Tiefraum* (deep space) and *Empfindung* (sensation) that he termed *Raumwirkung* (spatial effect) (1908: 43). Observing a tendency to only look at the physical in architecture, Riegl suggested that beyond architectural composition, buildings also had a psychological effect upon us. In other words, it was possible for the viewer to receive sensory impressions from the building that pointed to an intimate relationship between architectural composition and reception.

Exclusively focused on historic art, Riegl's art philosophy did not offer a model for the art and life of the present. Thus when it came to dealing with the inclusion of contemporary art, Dorner found that he could not rely on Riegl to provide a theoretical basis for the museum re-organisation and the practical curatorial challenges at hand (see Dorner 1958: 16).

Inspired by the dynamic space-time experiences of the modern world, many of the avant-garde works Dorner acquired for the museum were informed by the emerging imagination of a four-dimensional space prompted by scientific discoveries (the discovery of x-rays, electricity, Einstein's theory of relativity, and other scientific advances) and promoted radical ideas based upon energetic interrelations between human beings and their environment (see Henderson 1990). In Dorner's own words:

> We feel that the capture of our environment from a rigid, fixed standpoint, as in the perspectival image construction, results in a constricted space stage (*Raumbühne*) with massive scenery… captured only in front elevation which no longer correlates to the expansiveness of the space in which we move. (ca. 1926: 2)

To support a wider understanding of contemporary art and its promotion of a new *Raumbild*, Dorner set out to materialise the dynamic interrelations that inspired these works and make them comprehensible as part of a larger historic development.

5 Yet the central problem of *Raumbau* (space building), Dorner suggested, was not fully addressed in German Renaissance architecture; only Italian Renaissance architecture resolved "the problem of the equal confluence of *Einheitsraum (unified space)* and *Einheitsmasse (uniform mass)*" (1923: 10).

Materialising the energies of the past: An intensely integrated knowledge

In an article *Was sollen heute Kunst-Museen?,* published in 1924, Dorner outlined the experiential and intellectual objectives for this curatorial strategy, which he summarised under the heading of *atmosphere rooms*.

The emotional objectives for the spatial arrangement of artworks were:

1. To display the individual artwork in its context in such a way that it exerts the greatest possible emotional effect.
2. In addition, the individual periods of art development should be mediated to the visitor emotionally. Through this uniformity he receives the impression of clarity and through that the feeling of stability and calm.
3. Finally, this clearly-represented sequence of art periods shall be experienced as a whole - in their transition and in the consequences of their change. (Dorner 1924)

To frame these emotional encounters, accompanying textual information was required:

1. Each individual artwork must be explained in its provenance, subject matter of its pictorial representation, and the uniqueness of its style;
2. Each artistic period must be explained in its historical facts and the achievements of its style, and;
3. The entire development of art has to be revealed as a consistent sequence of styles, that build upon another, so that the entirety will be a survey of the growth and advancement of the human spirit in the area of the plastic arts. (Dorner 1924)

In his dual focus, Dorner judiciously recognised the degree to which a re-organisation could not simply be understood as a straightforward application of scientific and aesthetic criteria to the existing collection, but that some form of synthesis of intellectual and sensory impressions had to occur to engage new audiences. The two elements – the implicit knowledge gained through emotional experience and the explicit knowledge acquired by reading – had to be "co-ordinated as smoothly as possible" (Dorner 1925: 4). Dorner did not provide much information about a rigorous methodology behind the translation of his objectives into specific curatorial choices, nor did he refer to other curatorial models or scientific research on colour or perception. Taking its clues from the above objectives, the following analysis will investigate Dorner's curatorial interventions and how they can be related to the intended emotional and intellectual effects.

'Unframing' artworks: The immersion of the viewer

The first objective outlined in Dorner's article requested the isolation of the artwork for maximum emotional intensity. Primarily, this meant a significant reduction of the number of paintings to be hung on the wall space either as single-tiered hangings or other discrete arrangements – a form of display that was already practiced in Germany at the time. Widely-spaced and mounted at eye level, generally only one artwork occupied the visual field of the viewer, confronting him one-to-one. Once isolated, paintings were re-framed. Similar efforts had been undertaken previously by Wilhelm Bode and Ludwig Justi, both of whom abandoned elaborate, gilded frames in favour of simple, modern ones that enhanced the colours and aesthetic of the painting (Klonk 2009: 238).[6] In contrast, Dorner's reframing strategies revealed

his disinterest in the aesthetic considerations of his colleagues, and instead highlighted his attempts to reconfigure frames as conceptual devices that materialised historic conceptions of space by evoking architectural effects. This translation of an artistic *Raumbild* into an actual architectural arrangement is most clearly demonstrated in his treatment of paintings from major historic periods. In particular, the works of the Italian Renaissance and the Dutch Baroque which were well represented in the collections and whose underlying spatial logic was discussed in detail in Dorner's museum guide books. They were exemplary for his use of sophisticated framing detail to attain spatial impact, set these styles apart from their predecessors, or highlight regional differences.

The Italian Renaissance paintings were discussed at the beginning of Part II of Dorner's museum guide which covered the period "From the Renaissance to 1800" (1930, part II: 1). Focussing on "the registration of external appearance" (1927: 10), Dorner suggested that these works represented a decisive break with the medieval desire to reflect what was spiritual and hence beyond sensory perception. To him, Renaissance art almost signified a reversal of medieval conceptions of space – a turning point when "the capture of space became the artistic objective [and] the invention of perspective … made it possible to portray bodies and all other objects clearly delimited in space [both] in their full plasticity and in their relations to one another" (10). The increasing importance of space and nature during the Renaissance period, as Dorner understood, was clearly articulated in its documentation of "the factual matter of the visible world with sharp outlines and hard and clear colours" (ca.1930, part II: 1). The absolute viewpoint of the Renaissance *Raumbild* captured space as the homogenous expansion of three-dimensional volumes – clearly defined solitaires layered and overlapping – and this, Dorner claimed, not only instigated a break with medieval spatial imagination, but more importantly, represented the prevalent conception of space valid up until the then-present day. In this pervasive *Raumbild* "the image is a view out of a window; the picture frame represents a window frame; the segment of [depicted] space lies in front of us like a stage seen from a fixed viewpoint" (Dorner 1932: 30). Even film, as Dorner later noted, had not been able to free itself from "the disadvantage, that it always generates perspectival images of space" (1932: 37).

To translate this emphasis on cubic space and geometric volumes at the level of the exhibition space, Dorner selected frames that looked like window frames (albeit modern ones).[7] Intended to simulate openings in the walls of the room, the paintings were integrated as architectural elements to evoke in the viewer the impression of looking out through a window onto a stage set (see Flacke-Knock 1985: 52; Cauman 1958: 89), prescribing a statically defined position for the visitor, and materialising the Renaissance *Raumbild* as a viewing experience.

In contrast to his intense emphasis on frames in the Renaissance rooms, Dorner abandoned them almost entirely for the Baroque paintings of the Dutch by selecting a black-brown colour to match the edge colour of the canvases. He believed that in Dutch Baroque, the perspectival frame of the Renaissance was "fused together … to form a total unity of space and physical masses" (ca 1930, part II: 12). To attain this homogenising spatial effect, the Dutch painters developed two main innovations that fundamentally transformed the geometric *Raumbild* of the previous period. According to Dorner, "tone [was] one of the means, with which Dutch art achieve[d] its new, big effects … light-dark contrast [was] the second"(8). Masters like Rembrandt and his pupils synthesised these two techniques to achieve maximum impact. In their paintings, they sought to capture the forms of figures and objects through a variation of the degree of tonality within the brown overall

6 During his relatively short time as Director of the Städel in Frankfurt, Ludwig Justi reframed extensively, a practice he had learned during his time in Berlin as an assistant to Wilhelm Bode. The reference to Bode's reframing practices is mentioned in Klonk 2009: 238, note 68.

7 It should be noted that in principle this treatment reflected Renaissance practices whereby frames were "invariably designed as parts of an architectural interior and were frequently meant to harmonize with door and window surrounds". Paintings were often mounted in tabernacle frames that were in keeping with the architectural styles of Gothic cathedrals and elevated the picture from the wall. Styles ranged from elaborate to simple depending on the specifications of clients. Later, Renaissance paintings were frequently re-framed to match the interiors of their owners. See Newbery, Bisacca & Kanter 1990:11.

colour of the painting that could be lightened completely to attain white, or darkened to attain black, as Dorner observed (8).

But it was in the fusion of spatial layers that Dorner saw Dutch painting's fundamental departure from the geometric *Raumbild* of the Renaissance which, he believed, still persisted in the Baroque paintings of the neighbouring Flemish provinces. In the paintings of the Dutch, the objects in the foreground gradually disappear in darkness towards the edges, leaving behind the three-partite structure of foreground, middleground and background still favoured by the Flemish. For Dorner, this effect signalled that, apart from "the unsurmountable synthesis of plasticity and spatiality, the idea of something unbounded and infinite arises" (8). The two innovations of the Dutch - tonal gradient and contrast – permitted them to step from the "stage set to unbounded scenery" (6). And although their art dealt with similar issues than the neighbouring Flemish, it is this unlimited conception of space that "allow[ed] them to go further", and that made them appear "more modern" (7) from the perspective of the fluid space-time conceptions of the present, he observed.

With the re-framing of the paintings of the Italian Renaissance and the Dutch Baroque, Dorner achieved two effects: first, the spatial concepts present in respective art periods were transferred with ease onto the actual space of the museum. In attempting to reproduce the Baroque techniques of contrast and gradient, or the Renaissance conception of geometrically framed space in the relationship between painting and wall, he paid particular attention to details that extended the geometric and visual systems of a period to the design of the exhibition space, and reproduced painterly concepts as room-embracing aesthetic systems. Since all art was regarded by Dorner as a direct articulation of a particular *Raumbild*, both painting and curatorial practice could be thought of as spatial practices that worked with identical 'building materials' – colour, light, tonality, contrast, volume, geometry. By materialising the concepts of painting within the arena of the museum space, a *Raumbild* could be experienced at the scale of the room, at one glance, upon entering, and without perceiving anything in detail.

Second, in blending the frame colour with the colour of the painting's perimeter, Dorner 'unframed' the Dutch paintings, extending the pictorial space beyond the frame and into the sphere of the viewers.[8] Equally, we can speak of 'unframing' when the Renaissance picture frame became dissociated from the artwork and re-associated with the exhibition architecture as a window frame, effectively turning the painting into a 'view'. The anthropomorphising effect caused by the immediate encounter with the unframed works is comparable to that of earlier optical devices such as panoramas and dioramas which equally "cancelled the visual distance and made the viewer feel that he was right inside the picture" (Schivelbusch 1995: 217). Sloterdijk closely associated this method of 'unframing' with the phenomena of artificial immersion whose core aspect "is the potential replacement of whole environments – not only of the images, usually framed, one looks at in galleries. Immersion as a method unframes images and vistas, dissolving the boundaries with their environment" (2011 (2006): 105). In paying particular attention to the perceptual details of his display techniques, Dorner attempted to engage with the psycho-perceptual ideas also promoted by avant-garde and commercial art of his day and provided familiar connection points for new audiences. In subtle ways, the unframing techniques deployed by Dorner address what Margarete Vöhringer described as the "the technological access of the human psyche" explored by the avant garde and science at this time (Vöhringer 2007: 20).

8 It is possible to imagine that Dorner could have discarded frames entirely and matched the dark edges of the paintings with a black wall colour, which would have achieved an even greater sense of unboundedness. However, in the absence of electrical lighting at the Provinzialmusem at the time, a black wall might have darkened the rooms to an unacceptable degree.

Fig.1 Alexander Dorner. Room for Italian Renaissance art after its reorganisation [photograph courtesy of Niedersächsisches Landesmuseum Hannover - Landesgalerie].

Fig.2 Alexander Dorner. Room for Dutch Baroque art after its reorganisation [photograph courtesy of Niedersächsisches Landesmuseum Hannover - Landesgalerie].

Fig.3 Alexander Dorner. Room for Flemish Baroque art after its reorganisation [photograph courtesy of Niedersächsisches Landesmuseum Hannover - Landesgalerie].

Colour – The activation of the viewer

The second objective was implemented at the scale of the gallery room and required the emotional mediation of "individual art periods by creating a clear impression and a sense of calm" (Dorner 1924). For this, Dorner used room-specific wall colours to create the setting against which all other elements were to be staged. Steeped in a uniform hue, the rooms intensified the spatial effects imparted by the artworks. By formally organising rooms and their contents as unified milieus, a harmonised context was provided for each period or style. Apart from its formalising function, Dorner also assigned an "activating effect" to colour and employed it as a sensory aid for the instruction of inexpert viewers:

> A more passive attitude is seen in galleries where works of art are allowed to "speak for themselves" through being placed, in all their wealth of stylistic variety, against neutral backgrounds. This treatment is more satisfying to the scholar or specialist, who often resists intrusion of a museum director's philosophy, than it is to the general public, which welcomes such intervention as a help towards understanding. But the work of art isolated by its neutral background is a fish out of water. The more passive the attitude, it appears, the more likely the museum to revert to the uniform enfilades of the academic galleries. (Cauman 1958: 83)

It is important to note that Dorner's colour choices were unrelated to the colour preferences of period interiors (although sometimes his choices coincided) (Flacke-Knoch 1986/87: 135). Instead, he abandoned attempts at objective-historical registration in favour of an entirely interpretive history focussed on the evolution of concepts of space. These ideas represented a distinct break with the period room, a widely used display model, which aimed at a truthful reconstruction of historic spaces with furnishings that corresponded to the prevalent historic style of a period.

The use of colour in the context of exhibitions was not unusual at the time, and Monika Flacke-Knoch suggested that it is possible that Dorner was inspired by comparable efforts at the *Museum für Kunst und Gewerbe* in Hamburg by Max Sauerlandt (1986/87: 145 note 95), who had introduced colour to represent a period's predominant attitude towards life (Klonk 2009: 94). Sauerlandt's colourful appointment of the Hamburg rooms intended to epitomise the specific weight of the period's spiritual timing. Thus, medieval art was shown against a dark blue background accentuating religious seriousness and Baroque art against deep red brown emphasising its splendour. In these instances, correspondences between Sauerlandt's and Dorner's respective colour schemes can be observed. In other instances, however, substantial differences can be detected, particularly in their respective treatments of rooms for Renaissance art, where Dorner used cool whites and greys to represent the sober, geometric character of Renaissance art (Cauman 1958: 89) which contrasts with Sauerlandt's use of an energetic, golden yellow to represent manly, worldly joy (Klonk 2009: 94). But more importantly, fundamental differences in intent can be noted. Dorner's main concern lay in materialising the evolution of the *Raumbild* as spatial experiences. In that, he differed from Sauerlandt's representative approach that regarded art as the result of the artist's "urge to plastically shape inexpressible feelings" to which a larger "symbolic significance for the feeling of an epoch" was assigned (Sauerlandt 1921: 11). Sauerlandt's plans for the addition of fragrances and music to complete the impression of the artworks too, contrasted with Dorner's much more pragmatic idea of disseminating information via radio broadcasts transmitted by loud speakers (Flacke-Knock 1986/87: 125).

Dorner's striking arrangements of a few paintings against a surface of continuous colour created a saturated ambiance that pervaded the room – something the visitor would absorb at a glance. This idea of a "total overview" is evident in Dorner's resolve to minimise distractions so that nothing would disturb the atmospheric impact of the space and the immediate formation of a mental image. Everything was kept simple – all elements of the room were subordinated to the larger logic of the atmospheric image. Black linoleum floors minimised the reflection of daylight. Simple custom-designed benches and modern chairs were executed in a black colour to visually merge with the linoleum floors. Designed as low as possible and positioned at the centre of the rooms and at maximum distance from the paintings, these furnishings minimised any interference with the viewing experience. Thus the entire horizontal plane was dematerialised and in its "blackness" almost receded from sight. In the vertical plane, windows were covered with opaque curtains in wall colours to regulate the light, avoid glare and keep out distracting views to the outside world as much as possible, so that these would not compete with the paintings (Cauman 1958: 90-91). With these calculated manipulations, Dorner attained complete control over the internal environment, encouraging the viewer's identification with the themed environment. In contrast, other manipulations were introduced to the opposite effect.

Fig.4 Alexander Dorner. Custom-designed bench in the room for Expressionist art after its reorganisation [photograph courtesy of Niedersächsisches Landesmuseum Hannover - Landesgalerie].

Back and forth – Atmospheric immersion and awareness of reality

Reviewing the development of space from the Renaissance to the present in his 1934 article *Die neue Raumvorstellung in der Bildenden Kunst (The new Imagination of Space in the Plastic Arts),* Dorner concluded that the idea of a four-dimensional space and, with it, the "demonstration of a new experience of reality"(37), was most adequately captured with the animating effect and flowing change of perspective in film. It is through this lens that Dorner understood his historical re-organisation of the entire museum, where "a walk through the art collections of the museum unrolls the almost complete development of art from the year 1000 up until our day, and in beholding the artworks, we experience the great

transformations that have occurred in such profound ways" (Dorner 1927: 9). In using the term "unroll" ("*entrollen*"), Dorner hinted at a perceived analogy between museum experience and modern film.

Indeed, the Provinzialmuseum's carefully edited itinerary emerged as a succession of differentiated experiences that no longer provided continuity in the fashion of traditional museum narratives. Dorner's careful staging of the gallery spaces provided a sequence of emotional experiences intended to amplify harmony and continuity between different periods on one hand and conflicts and discontinuity on the other hand: in the museum guidebook and other information material, Dorner eliminated potential feelings of ambiguity by making the viewer aware of intended juxtapositions. For example, right upon entering the first room of the art collections, the viewer is alerted about the antagonistic relationship of antique and medieval art: "With the memory of a Greek marble statue, we enter the Romanic hall (1), here we are face to face with a spirit, that relates to antiquity like fire with water." (Dorner ca. 1930, Part 1: 2) Similarly, the fundamental differences between regional variations of Baroque art were evoked together with the contrasting colours and emotions of the respective exhibitions spaces. Augmenting these contrasts, Dorner takes the viewer by the hand, noting:

> When we move from the red room of the Flemish into the light grey room of the Dutch, then we come from a magnificent festivity to a silence that is solemn but not gloomy. There are rarely more striking contrasts, and yet both are Baroque. (Dorner ca. 1930, Part 2: 7)

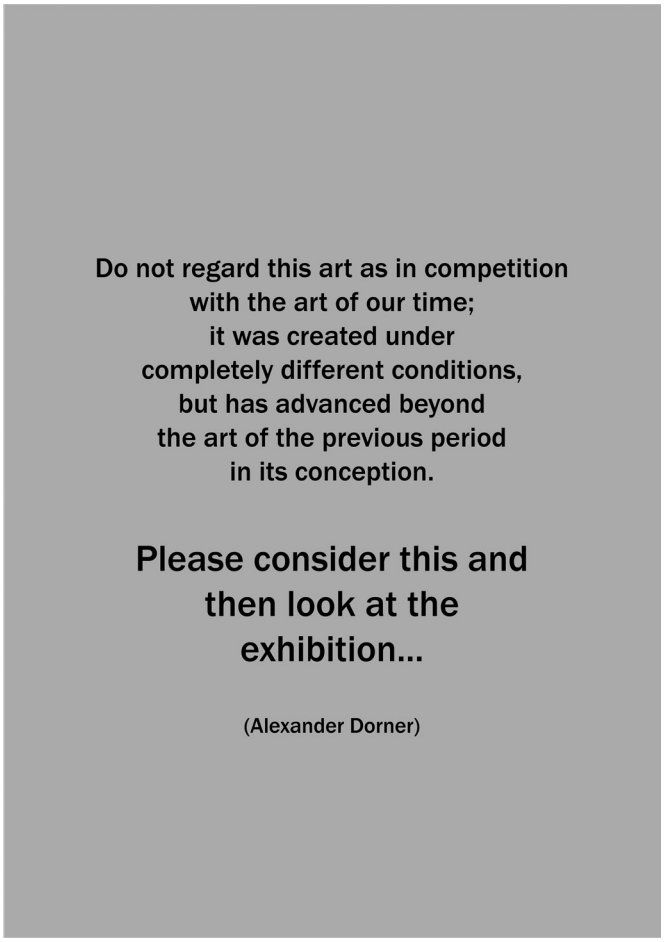

Fig.5 Alexander Dorner. Poster in coloured paper hung in doorway between exhibition rooms. [Illustration by author; text translated from German (see Katenhusen & Reuning 1993:27).

Fig.6 Alexander Dorner. Ramberg Room after its reorganisation showing door curtains [photograph courtesy of Niedersächsisches Landesmuseum Hannover - Landesgalerie].

In addition to the colours and the information provided in guide books, other formal and informal devices underlined the respective distinctness or relatedness of rooms and their art. Between contrasting rooms, colour-matched door curtains separated different rooms as discrete milieus and these had to be drawn open upon leaving and entering (see Cauman 1958: 91). Interrupting the viewer's historic identification with a period and foreshadowing change, the curtains functioned as instruments for physical and mental activation. This rupture was augmented by small coloured posters with slogans which were mounted in door openings between rooms. These addressed the viewer directly and gave instructions:

> Do not regard this art as in competition with the art of our time; it was created under completely different conditions, but has advanced beyond the art of the previous period in its conception. Please consider this and then look at the exhibition... (Alexander Dorner). (See Katenhusen & Reuning 1993: 27; Cauman 1958: 93)[9]

Together, door curtains and posters prompted the viewer's awareness of reality by interrupting the illusory, immersive experience of the atmosphere room. The short slogans complemented the intermittent "sequential locomotion" (Bennett 1995: 43) necessitated by the consecutive arrangement of rooms and offered a form of immediate reading that alluded to the graphic language of mass media encountered in everyday life. Looking back at this strategy 30 years later, Dorner observed: "I can see quite clearly today that my innovations, which involved the arrangement of objects, lettering, etc., were designed to introduce the concepts of modern science into the humane study of art history" (1958: 17).[10]

The experiential changes along the sequence of atmosphere rooms can be compared with what Sloterdijk has described as bathing in alternating pools:

> One cannot plunge into an empire's psycho-semantic immersive context without participating in its history. In this sense history is nothing but a diving tank shared with cavorting fellow swimmers, and what is commonly called participation is, seen in this light, merely a naïve dipping

9 Cauman mentions the poster text as the last page of a colourful "gallery book" that replaced the earlier guidebook (1958: 93). In contrast, in the exhibition catalogue "*überwindung der 'kunst' - Zum 100. Geburtstag des Kunsthistorikers Alexander Dorner* (Hannover, Germany: Sprengel Museum Hannover, 1993: 27), this text is mentioned as an example of a poster hung in the door openings of the atmosphere rooms. Dorner's own notes on the re-organisation mention boxes with notes that would be hung in the door openings (Notizen zur Neuordung Juli 1924, in: Archiv Sprengel Museum Hannover (cited in Flacke 1992: 52).

10 With Dorner's growing collaboration with avant-garde artists and the Bauhaus, the Provinzialmuseum became increasingly implicated in the rise of modern display tactics used in commercial exhibitions, advertising and film, and the associated interest in psycho-perceptual experimentation. These fields of interest had increasingly moved to the forefront of Dorner's thinking from the early 1920s onward and can be traced in his atmosphere room concept, which, as this study suggests, foreshadowed the interactive environments commissioned by Dorner during the later stages of his re-organisation work from 1926 onward: first, El Lissitzky's Abstract Cabinet in 1927, a display environment, where multi-coloured striated walls in modern industrial materials, movable paintings and coloured lighting provided dynamic spatial experiences for the viewer; and second, Moholy-Nagy's unrealised multi-media environment – the "Room of the Present" – in which film and photography completely replaced traditional art works (see Gebert & Hemken 2009).

Lissitzky's *demonstrationrooms* – the Abstract Cabinet and an earlier version, the Room for Constructivist Art at the *Internationale Kunstausstellung Dresden* 1926, have been discussed in detail by numerous authors. In particular see Giedion 1929: 103-106; Gough 2003: 77-128; Hemken 1990: 46-55; Bois 1988: 160-181.

> into a one-dimensional context (while so-called critique can only be learnt through immersive changes, through bathing in alternating pools or contexts). (2011 (2006):105)

In the back and forth between immersion and self-awareness, Dorner recognised the phenomenon of what he referred to as "an evolutionary psychology in action" (Cauman 1958: 88). The alternation between empathic identification on one hand, and rational recognition of reality on the other hand, materialised as the actual innovation of Dorner's curatorial ethos. With it, he recast fundamental assumptions about the reception of art as either rational (via distanced contemplation and visual) or empathic (via experiential immersion and haptic) by providing immersive changes and interruptions that encouraged a critical reception rather than the delivery of pre-mediated content.

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Translations from German by author unless otherwise indicated.

The ideology of virtual space: Cildo Meireles, 1968-7

Abigail McEwen

> I was resting on a seat opposite [Claes] Oldenburg's *Bedroom* (1963) [Fig. 1] when I saw two wealthy-looking upper middle-class ladies from São Paulo admiring the piece. They had been talking as they came up but suddenly they fell silent. I was surprised by their reaction. They were dumbstruck, fascinated. . . . Suddenly one of them turned to the other and said, 'How wonderful! How cute!' And finally one of them asked, 'Do you think we can buy something like this in São Paolo?' At that moment, I saw the problem of Pop Art very clearly: they didn't see the piece as a criticism but as a celebration. (Meireles 1999b: 138)

The optical ironies of Oldenburg's *Bedroom Ensemble* appeared vulnerable and carelessly self-referential to the young Brazilian artist Cildo Meireles (b. 1948) at the time of the 1967 São Paulo Biennial. A cloyingly domestic mise-en-scène, *Bedroom* celebrates the artifices of illusion. An anamorphosis in three dimensions, the room is built to the skewed proportions of a single-point perspective drawing, the furniture retaining the angles of the two-dimensional drawing on which it was based. Its hard surfaces and ersatz materials (imitation marble, vinyl sheets, fake fur) belie what Oldenburg recognised as the "softest room in the house", cooling the emotional valence of the home's most conventionally intimate space (Celant 1995: 204). Meireles questioned the integrity and intentionality of the installation, rejecting its spurious materials and geometry along with its too-easy commodification. Parsing through the logic of Pop, he began to identify for himself the crux of contemporary debates over the status of art and the nature of its objecthood.

The publication of Michael Fried's "Art and objecthood", just months before the opening of the São Paulo Biennial, brought renewed clarity to the discourse on

Fig. 1 Claes Oldenburg (1969). *Bedroom Ensemble, Replica I* [Courtesy: MMK Museum für Moderne Kunst Frankfurt am Main, former collection of Karl Ströher, Darmstadt; photo: Rudolph Nagel, Frankfurt am Main]

Modernism and its limits, as brought to bear by the advent of American Pop art and Minimalism (Fried 1967). In Oldenburg's New York, the rise of the 1960s had seen new challenges to Modernist autonomy, as championed by formalist critics in support of mid-century American abstraction. The issues were not only ontological, which is to say formal and structural, but also functional and situational. Minimalism's confrontational insistence, its charged theatricality and complicity with its observer, fundamentally threatened the philosophical enterprise of Modernist art and its self-critical, medium-specific values of shape and opticality. The conditions of art-making and reception – no less, the values of art itself – were deeply fraught by the time of Meireles' visit to the Biennial. *Bedroom Ensemble*'s flaunted pseudo-functionality, what Oldenburg described as its position "between what it seems to be and the work of art" (McDevitt 1965: 55), was enabled by its tacit withdrawal from both real-world and art-world contexts. Oldenburg emphasised the epistemic elusiveness of the work (hard or soft, angular or rectilinear, real or fake) as key to its independence, underscoring the irony of an exaggerated and reified illusionism as a riposte to the subjective experience of the work. The illusion is not in the object, Oldenburg explained, but in the eyes of the viewer (McDevitt 1965: 31). *Bedroom Ensemble* paid heavily for its autonomy, as Meireles understood, and its wilful indifference to context – its coy impermeability to its viewer and its setting – came at the price of its power over either one.

Oldenburg's concession was of an order that Meireles and the generation of artists that came of age in Brazil during the 1960s were unwilling to make. In Rio de Janeiro, the preceding rise of Neo-concretism had marked a break with the optical rationalisations of geometry, returning to the object its powers of mediation and, to its viewers, their full complement of senses. In their radical dematerialisations of the art object and phenomenological openness, the practices of artists such as Lygia Clark and Hélio Oiticica had opened a new horizon of possibility for art in the age of the "non-object". Defined by critic Ferreira Gullar in 1959, the non-object was premised on the continual and cumulative reconfiguration of space, understood no longer metaphorically but in real time (Gullar 1959). This re-cognitive function of the non-object, one that aimed to transform its space and simultaneously questioned the possibility of that transformation, served as a point of departure for the next wave of artists, who revisited in turn the communicative agency of its forms. Taking their cue not from abstraction but from Duchampian critique, lodged squarely in the logic of the art object itself, Meireles and his generation made explicit the power relations embedded within the open structure of the non-object. Alongside Brazilian contemporaries such as Artur Barrio and Waltercio Caldas, Meireles tested the parameters of art and, to a degree not met by their North American counterparts, defined early conceptualism in clear and ideologically topical terms. Indeed, the contingency of objects and of the systems in which they circulated became the urgent subject of Meireles' work by the later 1960s.

Meireles' destructuration of the object unfolded against the early years of Brazil's military regime (1964-85). He moved to Rio de Janeiro in early 1967 following a long adolescence in Brasília, the gleaming modernist metropolis created *ex nihilo* by Oscar Niemeyer and Lucio Costa under the presidency of Juscelino Kubitschek. The sinuous classicism of the city gave visible form to a new order of democracy and modernisation, upheld until the collapse of the Second Republic and the ensuing retreat from the utopian impulse it had embodied. Brazil's military dictatorship undoubtedly conditioned Meireles' early practice, both by providing a clear authority against which to act and, more suggestively, by stimulating the subtle, utopian dimension of his work. Acting in this contingent reality, he explored means by which to undermine and deinstitutionalise the power structures around

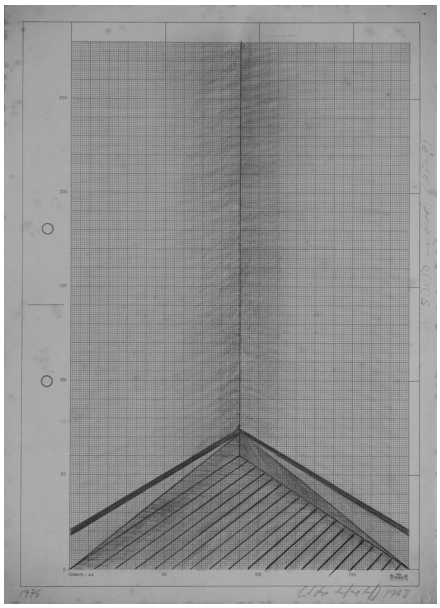
him, and his work from this period engages utopia in its different pathological, imaginative and ironic forms. Although Meireles has repeatedly acknowledged the political critique of his work, the pessimism surrounding the time has obscured the degree to which utopia – ideology's recursive "other" – functioned as a powerful counter to his lived reality. Unlike the commodity materialism of Oldenburg or the coarse assemblages of Argentine *Nueva Figuración*, Meireles' insistent recourse to material referents – e.g., parquet flooring, Coca-Cola bottles, plywood – probed instead their impulse toward dematerialisation. His objects refuse to disappear, however, as they do in some contemporary conceptual practices, and their material fact served a necessary role in communicating his critical utopianism. The friction created at the boundary between the material and the immaterial effectively enabled Meireles to employ his "virtual spaces" and "ideological circuits" as strategies of political intercession.

By 1970 Meireles declared his work "no longer concerned with the object" at all and from that point forward a pure "practice", by which he meant a direct intervention into real and manifestly political space (Meireles 1999a: 113). This essay suggests the ways in which, over a period of approximately three years, Meireles came to define the terms of his practice around the axes of medium and mediation, on the one hand, and of ideology and utopia on the other. The materials of art took on new, functional significance within this revisionist ontology of art, in which contingency became central to the structure of the work itself. The seeming latency of his materials – suggested by their ordinariness, ephemerality and mutability – was in fact instrumental to their agency, foregrounding the *work* of art in real space and time. Focusing on three signal artworks of his early period – *Virtual Spaces: Corners*, *Insertions into Ideological Circuits*, and *Tiradentes: Totem-Monument to the Political Prisoner* – this essay describes how the dematerialised non-object came not only to intervene in a social system, but also to take the structure of a network, effectively turning the tables on the subject and object of the mediation. The oscillations of this network and its calibrated contingency suggest in turn an intervention into the spiralling ideological circle within and against which Meireles directed his work.

Virtual Spaces: Corners, 1967-68

Meireles drew compulsively – cathartically, he has allowed – during the mid-1960s, but he began to consolidate his practice in a more deliberate way following his arrival in Rio de Janeiro, turning to graph paper to work out a new series, *Virtual Spaces: Corners* (Figs. 2, 3). A 44-piece project first conceptualised in these drawings, *Virtual Spaces* explored the phenomenon of virtual reality through a series of interventions into Euclidean space. In each case, Meireles presented planar axes of projection whose lines of convergence and near-convergence disfigure the regular right angle through perspectival distortions, creating unexpected, seemingly irrational envelopes of virtual space. The spatialised planes operate on the logic of the non-object, inserting themselves into the real space of the world only to transfigure it, creating in some cases structural ambiguities irresolvable in three dimensions and, in others, displacements of the corner through a kind of mental parallax. The transposition of the drawing into a built re-creation of a corner made the abstraction more concrete: the virtual space circumscribed by the off-angle junctions created a cognitive disconnect between the image that the viewers saw and that which they experienced (Figs. 4, 5). A plausible response to the internalised autonomy of Oldenburg's *Bedroom*, the *Corners* insist upon the contingency of viewing and, by extension, the position of the viewer.

What prevented *Virtual Spaces: Corners* from slipping into a pure exegesis of spatial geometric or phenomenological problems was the specificity of the context in which the three-dimensional constructions were imagined to function. In 1968, Meireles built three models to scale from the series of drawings. Intended for the Paris Pre-Biennial, scheduled to open in May 1969 at the Museum of Modern Art in Rio de Janeiro but pre-emptively shut down hours before its opening ceremonies, the works were shown a few months later at the Salão da Bússola in the same venue. They were exhibited with the English title, "Nowhere is my Home", meant to be read alternately as "No, where is my home?" and "Now, here is my home" (Morais 2005: 35). The corners he chose to re-create were those of a domestic interior: a house with parquet floors, red baseboards and canvas-covered pink walls. The familiar, everyday setting of a household served as a foil to the real and increasingly *unheimlich* space on the other side of the corner, the non-autonomous and ideological space to which Meireles laid claim.



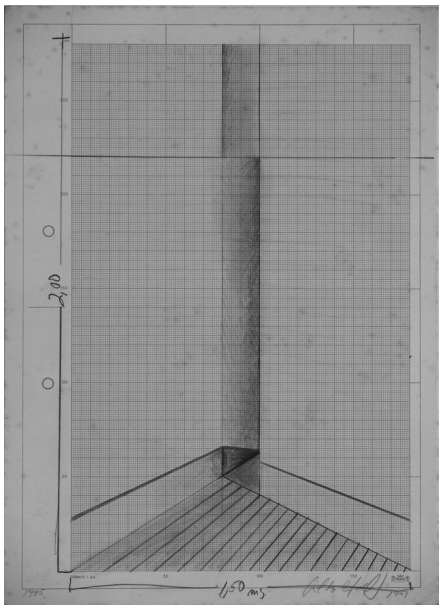


Fig. 2 and 3 Cildo Meireles (1968-75). *Espaços virtuais: Cantos (Virtual Spaces: Corners)* [Courtesy: Atelier Cildo Meireles]

Fig. 4 and 5 Cildo Meireles (1968-75). *Espaços virtuais: Cantos IV (Virtual Spaces: Corners IV)* [Courtesy: Atelier Cildo Meireles; photo: Pat Kilgore]

A space of contingency but also of imagination, the virtual corner served practically to upset, or to call into question the new, normative status of the actual world that it bracketed. Meireles has explained that the series grew out of a dream experience that he first experienced as a child in his grandmother's home and that recurred years later at a bar in Rio de Janeiro: a woman appeared out of a corner of a room, collected herself, and vanished (Morais 2005: 32-3). The turn toward the oneiric and the imaginary, at a moment of ideological consolidation, acted here as a check on real power, one that suspended the inevitability of its course by questioning its, and our own, assumptions. As a form of utopian critique, the magic of this imaginary space circulated at the threshold of what was possible. Its fictionality – its absurdity, even – was part and parcel of its radicality, its audacity to dare replace the authority in power. Seen in a different way, the intimacy of the work's origins invites further meditations on the blurring of public and private space and of mind and matter. The spatial specificity of the dream is hardly incidental; its domestic authenticity acts as a foil to different constructions of virtual space (imagination, dream) and physical space (home, homeland, nation). The architectural space created by and between the two perpendicular walls elegantly mediates these spatial disjunctions through minimal, phenomenological means. Meireles' *Virtual Space* is ultimately actualised through the movement of the viewer-participant through the liminal break between the walls, a passage that amplifies the nexus between psychological, physical and public space.

This invisible boundary between the realisable and the impossible was in this way distilled in the virtual space of Meireles' corners, posited at the threshold of social reality and imagined utopia. The corners circumscribed a suggestively entropic and ideological space, but their metonymy seemed already a limitation to Meireles by 1968, as he turned to what he described as "volatilized" forms meant to intervene directly into the public sphere. "I was no longer working with metaphorical representations of situations," he explained of his practice between 1968 and 1970. "I was working with the real situation itself" (Meireles 1999a: 110). The combustible *Southern Cross* (1969-70), a tiny pine-and-oak cube presented as a microcosm of friction and resistance, belongs to this transitional moment, but his most systemic critique manifested as *Insertions into Ideological Circuits* (1970-75). "Always one works with the possibility of transgressing reality," Meireles reflected at the time, "to make works that do not simply exist in an approved, consecrated space; that do not happen simply in terms of a canvas, a surface, a representation" (1999a: 113). His mandate carried new urgency by 1970, the start of what would be the five darkest and most oppressive years of Brazil's dictatorship.

Insertions into Ideological Circuits, 1970-75

What *Virtual Spaces* suggested to Meireles was how questions of medium turned less on the physicality of a support than on the specificity of the space in which the work acted. The three-dimensional *Corners*, for example, had posited a virtual feedback loop between the spatialised non-object, the intermediary viewer, and the social world. His next step was to eliminate the lingering subjectivity of the encounter – the imaginary projection required of the viewer – in favour of a purely autonomous artwork structured as a network itself. *Insertions into Ideological Circuits* consisted of two related interventions. The first, and for Meireles the more important, was the Banknotes project (Fig. 6), in which he removed paper currency from circulation, stamped it with different provocations and instructions, and put it back into circulation. Messages ranged from the admonishing "Yankees Go Home!" to the probing "Who Killed Herzog?", the latter the final reprise of the series and circulated in response to the 1975 assassination of the Brazilian journalist Wladimir

Herzog, whose torture and murder were reported as a suicide. The companion project took aim not at the government but at industry and capitalism through the ubiquitous Coca-Cola bottle (Fig. 7). Meireles took ordinary, recyclable glass bottles out of circulation, used decals to silkscreen his message onto them, and then returned them to local centres for redistribution. As with the banknotes, the text invited further operations on the part of the viewer-collaborator, instructing: "Record critical information and opinions on the bottles and put them back into circulation." In both cases, the insertions into the consumerist circuit were a function of their use value (and materiality): only when the bottles were filled, or the banknotes spent, did their messages become easily legible and their real work begin.

Fig. 6 Cildo Meireles (1970). *Inserções em circuitos ideológicos: Projeto* cédula *(Insertions into Ideological Circuits: Banknote Project)* [Courtesy: Atelier Cildo Meireles]

Fig. 7 Cildo Meireles (1970). *Inserções em circuitos ideológicos: Projeto Coca-Cola (Insertions into Ideological Circuits: Coca-Cola Project)* [Courtesy: Atelier Cildo Meireles; photo: Pat Kilgore]

Insertions into Ideological Circuits arose out of a need, Meireles explained, "to create a system for the circulation and exchange of information that did not depend on any kind of centralized control" (1999a: 110). In April 1970, he wrote a text for Kynaston McShine's important early exhibition of conceptualism, *Information*, at the Museum of Modern Art in New York, that explained the rationale behind *Insertions*:

1. In society there are certain mechanisms for circulation (circuits)
2. These circuits clearly embody the ideology of the producer, but at the same time they are passive when they receive insertions into their circuits
3. This occurs whenever people initiate circuits (1999a: 110)

The self-sufficiency of the circuit, as Meireles understood it, invited a dialectical play with its interlocutors, and this state of constant interference (of "counter-information", in his words) was both transgressive and contingent (Meireles 1999a: 110-113). His abdication of control insinuated an anarchic, or despairingly nihilist, solution to the problem of power. Yet the ideological circuit also contained a vital utopian impulse, and the tension (and irony) sustained between autopoietic autonomy and imaginative reinscription marked this work with broader, ontological implications as well. Two points arise with respect to the changing status of an art practice that voluntarily relinquished its identification with material forms, yet could not operate without them. The first turns on questions of medium and on how an understanding of art as a system might alter our understanding of its work. The second considers the ideology of form and asks what was at stake in Meireles' retention of material referents for what had become an increasingly conceptual practice.

In structuring *Insertions* as a network, Meireles allowed the autonomy of the circuit – the quintessential non-object, as he knew – to unmask relations of power and their institutional apparatuses. The idea of the circuit was important to him, as it drew attention to the interconnections between art and the structure of social relations within which its forms were produced and received: "The container always carries with it an ideology", and as he further stated, stressing the performative work of the interventions on the public:

> An insertion capitalizes on the sophistication of the medium in order to achieve an increase in equality of access to mass communication. Additionally, it brings about a transformation of the original ideological propaganda inherent in the circuit – whether produced by industry or by the state. The effect of this ideological circuit is like an anaesthetization of public consciousness. The process of insertion thus contrasts awareness (a result of the insertion) with anaesthesia (the property of the existing circuit). Awareness is seen as a function of art and anaesthesia as a product of the alienation inherent in industrialized capitalism. (1999a: 110)

In this sense, the circuit became a way of re-characterising the autonomy of art, seen not through the modernist paradigm of absorption and theatricality, but understood here as autopoeisis. The self-sufficiency of the *Insertions* effectively dissolved notions of agency and authorship: once Meireles set the banknotes and bottles into circulation, the dynamics of their play and perpetuation became at once boundless and self-determining. In appropriating the dialectical logic of the network as their own, the *Insertions* defined the terms of their critique through their medium, the process itself, and through the contingency of their co-opted material referents.

Inasmuch as this process was virtualised and conceptually immaterial, as the *Corners* series anticipated, the targets of its work were tangible. As a form of social praxis, the action of *Insertions* against authority was clear: Meireles took as his target Brazil's military regime and sought to connect to and recuperate the mass public through these low-level interventions. He was careful, however, to distance his practice from proselytising, or propagandistic stratagem, insisting that even an explicitly political work "[had] to stand by itself as an art object, formally and conceptually". Yet the essential neutrality of the structure risked distortions and misreadings of his message: "to do nonproselytizing work," he allowed, "you open the space for someone to invert your intentions" (Farmer 2000: 36). The work of *Insertions* thus hinged on what Meireles called awareness, flickers or instantiations of consciousness in the alert viewer-participant that interrupted the numbing anaesthesia of ideology. In this way, the circuit may be seen not only as an open-ended process but also as a medium of consciousness. Less a question of cognition, or of more precise visual information, awareness in this context signified a groundedness in the real world. Meireles understood this embodiment effect as a precondition of his works' political critique, and the self-awareness invited by *Insertions* probed ontologies both of being and of art.

If the crux of the *Insertions* turned on this recursive relationship between mediation and medium (defined both as process and as embodiment), then the contingency of the work might be considered both sociological and existential in kind. The material transmission of the Coca-Cola bottles and the banknotes depended on institutional systems of exchange to facilitate the propagation of the circuit; as a viral operation, *Insertions* relied on the transactions made between the public and institutional bodies. The notional universality of their circulation was unquestionably a utopian construct, but even the plausibility of change, however impossible, served as a reality check against the distortions and estrangements of the state. In his *Lectures on Ideology and Utopia*, Paul Ricoeur noted the "paradox in [Karl] Mannheim that what characterizes utopia is not an inability to be actualized but a claim to shatter" (1987: 309). As a shattering of, or incursion into, consciousness, *Insertions* worked most productively on individuals who nevertheless knowingly immersed themselves in their day-to-day world, acknowledging the inevitability of their place within the circuit. Meireles could not presume the public's self-awareness, however, and an important contingency of *Insertions* was its wager on the will of its interlocutors to counteract the anaesthesia of power. "We cannot eliminate from social ethics the element of risk," Ricoeur allowed, and *Insertions* posited a twofold gambit: on the operations of pre-existing systems of exchange and, more critically, on the willingness of a body politic to not only be drawn into these ideological circuits, but to work against them (1987: 312).

The action of *Insertions* was thus in some way entropic by design, suggesting in theory the radical disordering and replacement of power relations rather than their reform or re-institutionalisation. The irony of this utopian premise lay in its liminal plausibility, or what Ricoeur alternately defined as the threshold between the sane (albeit fictional) and the insane (the pathological). The fictionality of *Insertions*, seen as a parallel microcosm of power, played out on a conceptual level, enacted in the transitive, virtual space of the circuit. In search of a more pathological intervention in 1970, Meireles made a one-off work, *Tiradentes: Totem-Monument to the Political Prisoner*, which tested the utility of contingency in an extreme and unrepeatable way.

Tiradentes:
Totem-Monument to the Political Prisoner, 1970

Meireles planned *Tiradentes* around the inauguration of a new art space in Belo Horizonte in April 1970. The piece consisted of an eight-foot-tall wooden stake set into the ground with a clinical thermometer fixed to its top and a white cloth laid at its base. Ten hens were tied to the post, doused with petrol and burned alive (Figs. 8. 9). The title pays homage to the eighteenth-century Brazilian freedom fighter Joaquim José de Silva Xavier (1748-92). Known as Tiradentes, he organised the first uprising against Portuguese rule in 1789 and was subsequently hanged and quartered. In a jarring but intentional coincidence, the exhibition fell during the national, weeklong commemoration of the historical uprising; it was conceived as a part of a larger army initiative to appropriate the legend of Tiradentes as its own.

Fig. 8 and 9 Cildo Meireles (1970). *Tiradentes: totem-monumento ao preso politico (Tiradentes: Totem-Monument to the Political Prisoner)* [Courtesy: Atelier Cildo Meireles; photo: Luiz Alphonsus]

The piece was unquestionably meant as an indictment of the military regime, but Meireles intended it as well as an examination of material and sculptural space: "It's a work that could only exist in that format, with those materials, having a patent and profoundly painful relationship with the theme," he later explained, taking care to emphasise the work's material and ontological significance (Morais 2005: 61).

> It expressed my beliefs and also responded to the demands of the art-work I was trying to produce. There were formal and conceptual aspects which were closely linked to the issue of the art object, and which had nothing to do with political discourse.
>
> I was interested in metaphor and in the dislocation of the theme. I wanted to use the subject, life and death, as the raw material of the work. This dis-location is what matters in the history of the art object. (Mosquera 1999: 15)

Meireles has stressed the materiality of *Tiradentes* not to deny its violence but rather to point up the work's critical role within his constellation of ideological circuits and their mediations of power. The combustion of its materials literally exploded the sculptural field, introducing contingencies of life and death into the real space and time of the museum's opening. *Tiradentes* represented an extreme form of attack against ideology, and the visual spectacle of its trauma shifted the discourse more fully from concept to praxis. A rejoinder to the at times dry-ly-cerebral modes of conceptualism, *Tiradentes* drew purposefully on the visual drama and material transformations of sacrificial fire, which here hypostatised the threshold between art and life.

An incursion of greater magnitude than the *Insertions* into orbits of power, *Tira-dentes* embodied contingency and its utopian corollary through the merging of

pathos and pathology. The recourse to violence as a one-off condemnation of the human lives and freedoms lost reflected the exigency of contemporary political circumstances and, in the ideological terms of Meireles' practice, an entropic impulse spiralling toward dystopia. Meireles was at his most nihilistic here, and the futile immolation of the hens betrayed the cruel pathology at the farthest limits of utopian projection and the ultimate dematerialisation of sculptural form. The conceptual transfiguration of living beings into a "totem-monument" represented a scathing and improbable implosion of social and material space. As a performative mediation into what Meireles earlier called virtual spaces and ideological circuits, *Tiradentes* made real the contingencies of the world and of the non-object, here pushed toward a deeply existential end. The abjection of *Tiradentes* effectively denied utopia's escapist pull, and the formlessness of his totem-monument registered a morbid and harrowing critique of the regime in power.

Meireles left Brazil for New York in 1971, removing himself for a couple of years from the increasingly repressive measures of the military government, to participate in the international rise of conceptualism from a more central place. He adapted the *Insertions* for a North American audience and continued to probe the epistemic values of the art object, deployed through different and novel conceptual channels. Yet the material evolution of his practice between 1968 and 1970 was foundational both for his later work and for ontologies of the Brazilian non-object, whose discursive space he broke open and suggestively redeployed. From the visual parallax of *Virtual Spaces: Corners* to the autopoietic *Insertions into Ideological Circuits* and the incendiary *Totem-Monument*, Meireles posited the plasticity of increasingly and radically dematerialised forms. In this way re-characterising and expanding the sculptural field, he showed how the non-object could attain new functionality, making visible the vexed, pathological circuits of power and utopia. This tension between the ideological and ontological authority of an artwork crystallised in his practice by 1970, and these paradigmatic early works suggest the changing conceptual horizons of sculpture and its capacity to condition our sense of the real. Meireles has continued to explore the landscape of sculpture in more recent work, notably in the form of installations that have probed the experience of sound (*Babel*, 2001), colour (*Red Shift*, 1967-84) and measurement (*Fontes*, 1992) – different systems that shape dematerialisation, as it were, in critical ways. Now celebrated as one of conceptualism's most significant and earliest interlocutors, Meireles has persisted in his commitment to the material expressiveness of art, even as his works engage different media.

The latent materiality of Meireles' earliest conceptual turn is often overlooked, but the reality check provided by his various and sundry material referents – architecture, consumer goods, living organisms – critically underlay his utopian conceits. Instrumentalised by invisible, ideological circuits, these quotidian objects pressured the boundary between material fact and immaterial mediation. They posited an interactivity that was both physical (as in the movement of bodies through space and objects through transactional hands) and conceptual (the negotiation of public and private spaces, the totemic monumentality of transubstantiated matter). The contingency and mutability of these materials were necessary conditions for Meireles' utopianism; indeed, the obduracy of their presence, even in autopoietic networks and incinerated remains, made specific and painfully real the ideological critique that girded his practice. Insinuated around the axis of medium and mediation, these material resonances ultimately reified – by virtue of their reality and their historicity – Meireles' many virtual spaces, locating his non-objects unmistakably in the real world.

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The Merz Mill and the Cathedral of the Future

Matthew Mindrup

Introduction

Kurt Schwitters' small cathedral model from 1920, *Haus Merz* (House Merz), provides an extraordinary point of entry for the study of a key moment in German architectural history when artists and architects set aside their divisions to project a new German architecture as a *Gesamtkunstwerk* (Total Work of Art). It is during this time that one witnesses a fundamental change in the approach of German architects towards the use of materials for conceiving new architectural form. Compared to normative design practices that employ drawings and models to materialise an architect's ideas in physical form, Schwitters proposed that architects should find inspiration for new designs in the process of assembling their materials. Haus Merz demonstrates this approach to constructing architecture by reusing materials that have been found already transformed into the products of everday life – a set of gears, a trouser button and a spinning top. In the imagination of the architect, the selection and placement of each material is dependent upon its abilty to change identities and represent an element of architecture.

Early musings on this approach emerged from Bruno Taut whose 1914 article "*Eine Notwendigkeit* (A Necessity)" promoted a turn to architectural building materials

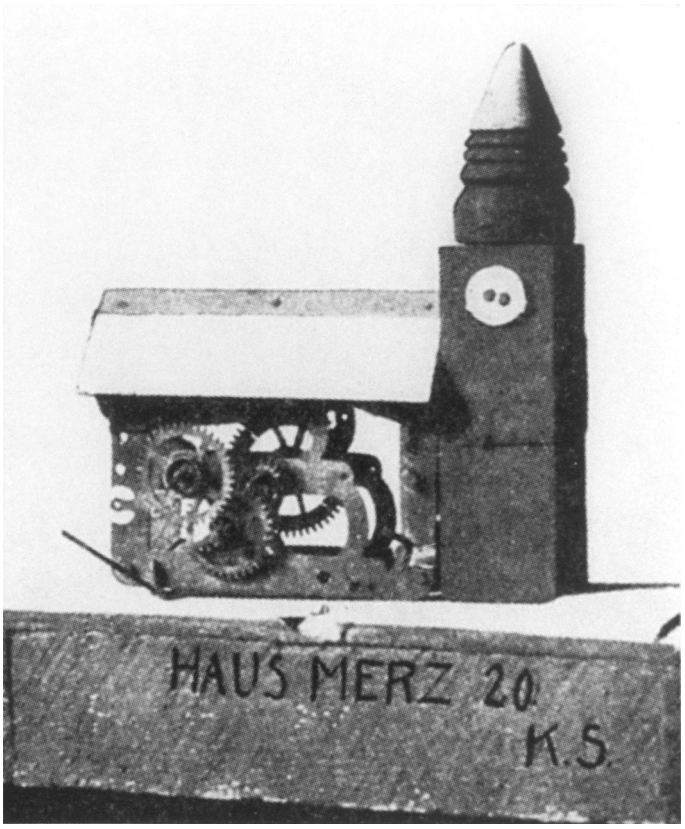

Fig. 1 Kurt Schwitters (1920). *Haus Merz* (House Merz) [Photograph, Kurt Schwitters Archive, Sprengel Museum, Hanover, Germany, © 2013 Artists Rights Society (ARS), New York / VG Bild-Kunst, Bonn]

as inspiration for the invention of new architectural form. To this end, Taut encouraged his fellow architects to follow the contemporary Expressionist painters in developing a new architectural spirit. What Taut had in mind was not the painting of facades or an "adoption of the external forms of painting" to architecture but to emulate the artistic processes of "construction" in painting in the construction of architecture (1914: 174-5). Holding up the Gothic cathedral as the favoured prototype, Taut called on architects to lead the other arts in creating a new crystalline architecture of glass that would unify architecture, painting and sculpture into a single artistic form (1914: 174-5). After the end of the First World War, his call for a new architecture was again taken up by German artists and architects in the *Arbeitsrat für Kunst* (Working Council for Art). These individuals rallied themselves around Taut's manifesto, *Ein Architektur Programm* (An Architecture Program) and Gropius' proposal for a new German architecture as a *Gesamtkunstwerk*. For Gropius, this new architecture would manifest itself as the *Zukunftskathedrale* (Cathedral of the Future), a structure whose effect on the design of all things he compared to the emmanation of light from a crystal (July 1919).[1]

Following closely on the heels of the *Arbeitsrat für Kunst*, Schwitters identified a similar aim underlying his new Merz art. For an exhibition at the Expressionist Sturm Gallery in 1919, Schwitters explained that "Merz" denoted his artistic transformation and re-assemblage of discarded man-made and found materials into new matrixes. For Schwitters, each object in a Merz work began as a unique combination of material form and immaterial idea that had to be lost through a mental process he would describe as a kind of "milling". Like Taut and Gropius, the ultimate manifestation for Schwitters' Merz milling of found materials was the creation of a "*Merzgesamtkunstwerk*". Contrary to Gropius' use of a crystal to describe the effect the *Zukunftskathedrale* would have on the making of a new German architecture, Schwitters sought to use Haus Merz as a model for the imaginative projection of architecture through the constructive assembly of its materials. This paper explores a confluence of themes concerning the role of the material and immaterial in Haus Merz that has been largely overlooked by scholarship on Schwitters' *oeuvre*. In comparison to Gropius' *Zukunftskathedrale*, Schwitters approached his materials not as a receptacle for an architect's ideas but a determinant source of inspiration for the discovery of new form.

Merz and its figurative experiments

Schwitters' Merz art and architecture emerged after 1918 following explorations in several genres of art, including Academic painting (1909–1914), Impressionism (1914–1917), Expressionism (1917) and Abstraction (1917–1918).[2] Reflecting on the years leading to his invention of Merz, Schwitters suggested that a new sense of freedom following the end of World War I led him to quit his architectural studies at the Technische Hochschule Hannover (Hanover Technical College), and his job as a mechanical draftsman, to devote himself full-time to being an artist.[3] During this time, he developed a method of assembling found objects into art that he called "MERZ", a term coined after a word fragment in his first collage (1927: 99-100). For Schwitters, "Merz" meant "the combination of all conceivable materials" into a physical *Ausdruck* (expression) of art.[4] However, as Schwitters would later explain, the materials in his Merz art already had an individual immaterial identity he called an *Eigengift* (inner poison) (1923: 8-11). For Schwitters, in order for an object to be included in a Merz work, this *Eigengift* had to be lost through a mental process by which its identity or purpose changed even as the physical appearance of the thing remained unaltered.[5]

1 My English translation of "Zukunfstkathedrale" as "Cathedral of the Future" contrasts with Wingler's "structure of the future" (1978 : 31-33).

2 This chronology of dates is developed by John Elderfield (1985: 14).

3 For Schwitters' military service and employment as a mechanical draftsman see: Schwitters (1926). Typewritten manuscript reproduced in Schwitters 1981: 240-42, especially 241; also see Webster 1997: 29, 40). For Schwitters' enrolment in the study of architecture at the *Technische Hochschule Hannover* see Schwitters (1926). Typewritten manuscript reproduced in Schwitters (1981: 241).

4 In *"Die Merzmalerei"*, Schwitters explained that the term "Merz" meant "the combination of all conceivable materials for artistic purposes" (1919: 580). This English translation (hereafter denoted simply as 'ET') by Elderfield (1985: 50-1); later, in "Merz", Schwitters claimed every combination of materials has a unique *"Audruck" (*expression) that was ineffable (1921: 5).

5 Ibid.

With the exception of a few Merz collages from the same period, Schwitters' Merz works between 1919 and 1921 tended to obscure the original identities of the materials assembled in them. In these instances, Schwitters collected discarded objects, including torn and cut pieces of printed matter, and pasted them onto canvases in various angles or directions making their uses as utilitarian objects, photographs or pieces of text unimportant (2001: 213-433).[6] As Schwitters explained in his article "Merz", the materials in a Merz assemblage were "not to be used logically in their objective relationships, but only within the logic of the work of art" (1921: 7).[7] Compared to these constructions, the selection criteria that Schwitters intended to employ for the found objects used for a Merz collage differed from those he assembled in his early three-dimensional work that tended to retain their original identities.

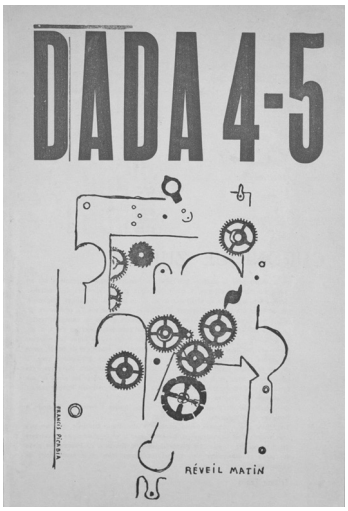

Fig. 2 Francis Picabia (1919). *Réveil-Matin I* (Alarm Clock no. 1) [Illustration: © 2013 Artists Rights Society (ARS), New York / ADAGP, Paris]

Shortly after the first exhibition of his Merz art at the *Sturm* gallery in July of 1919, Schwitters began experimenting with found materials to create sculpture and architecture (1919: 580). As he explained in *Merz,* this expansion into three dimensions meant to *modellieren* (to sculpt or model) (1921: 6). In the text that followed, Schwitters introduced Haus Merz as his "first piece of Merz architecture" and included a quote from his friend, the art critic Christof Spengemann, who published a photograph of the small assemblage in his article "Merz: Die offizielle Kunst" (Merz: The Official Art) and identified it as *die Kathedrale* (the Cathedral) (1920: 40-1). Schwitters' statement in *Merz* was the only explanation he made of the small assemblage's intended role in his Merz *oeuvre*.

The photograph of Haus Merz included in Spengemann's article shows an open metal structure filled with gears standing next to a tower-like object supporting a trouser button on one of its sides, confirming Schwitters' own description. The tower of Haus Merz also appears to have the same proportions as a common children's toy building block from the popular German Anker Anker Stone Toy Building Block set (7.5 cm x 2.5 cm x 2.5 cm), making the tower clock only 1.4 cm in diameter, and the spire 4.5 cm tall (Mindrup 2007, 164). These are the approximate sizes of what Spengemann has identified as a trouser button and other scholars recognise as a small spinning top.[8] The entire construction was mounted on a rough wooden base inscribed with a title, date and signature: "Haus Merz 20. K.S." As architecture, the choice and selection of found objects for Haus Merz appears to have been based on Schwitters' decision that they could take on the forms and motifs associated with an actual cathedral. Yet, unlike the normative practice of tranforming materials into specific architectural elements, the objects Schwitters found and assembled in Haus Merz were not originally made to represent buildings or their parts, while the gears in its nave would leave little room for people to congregate in it.

Many of the elements that Schwitters used to compose Haus Merz were frequently depicted in his watercolour and stamp drawings from the same period of time. For example, wheels figure prominently in two watercolor drawings from 1919 including *Aq. 21: Anna Blume und Ich* (Water Colour 21: Anna Blume and I) and *Aq. 30: Dies ist das Biest das manchmal niest* (Water Colour 30: This is the Beast that Sometimes Sneezes) while in the stamp drawing *Ohne Titel: mit Rot vier* (No Title: With Red Four) from the same year, they take on the appearance of gears. Art historians found these items similar to the gears in Francis Picabia's 1919 print *Réveil-Matin* (Alarm Clock) that was published on the title page of *Der Dada 4-5*, an issue which Schwitters undoubtedly owned.[9] Whether or not Schwitters' Haus Merz was directly inspired by Picabia's Réveil-Matin, its overall appearance is remarkably

6 There are many Merz collages in which a word or number pasted into the collage have become the title. These, however, do not appear to be directing the organisation of the other elements in the work of art but merely as a way to name it.

7 ET by Ralph Manheim in Schwitters (1981: 407).

8 For the different identifications of the objects in *Haus Merz* see Spengemann (1920: 41); Elderfield (1985: 113-4); Burns Gamard (2000: 74); Dietrich (1993: 170).

9 Elderfield (1985: 45-47. See Elderfield especially p. 47, n. 72); Dietrich (1993: 86, n. 9); Gamard (2000: 75).

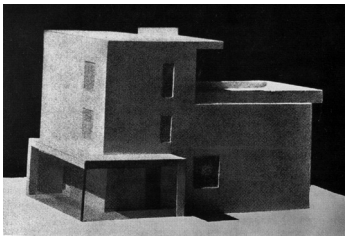

Fig. 3 Walter Gropius (1922). Plaster model of *Einfamilienhaus* (Single-family House) [Photo: © 2013 Artists Rights Society (ARS), New York / VG Bild-Kunst, Bonn]

similar to the small, naively drawn churches that emerge in his watercolour drawings from 1920: *Aq. 11: Bild Frau-Graus* (Water Colour 11: Picture Woman-Scare) from 1919 and *Aq. 24: Der Kopf unter der Mühle* (Water Colour 24: The Head under the Mill) while in the stamp drawing *Ohne Title: Drucksache* (No title: Printed Matter) from 1919, a cross on the steeple indicates that they are Christian buildings.[10] Unlike the objects depicted in Schwitters' watercolour and stamp drawings that maintained their identities as cathedrals, wheels, coffee grinders or candles, those that he assembled in Haus Merz represented the parts of another object, a cathedral model.

Nevertheless, despite its scale and Schwitters' naming of Haus Merz as "architecture", architects and historians discussing his Merz *oeuvre* have not come to terms with its purpose. Those who mention Haus Merz refer to it as a "sculpture" of "a model church" or an "assemblage representing a church edifice or cathedral", but not a model for creating architecture.[11]

Haus Merz and the Zukunftskathedrale

That Schwitters created his first piece of Merz architecture as a cathedral model is to be understood not as the promotion of a religious belief but as the representation of a new German architecture. After Germany's defeat in World War I and the abdication of Kaiser Wilhelm on November 9, 1918, many architects sought to join with the Socialists in Berlin to help forge a new German Republic.[12] These architects aimed for direct power within a decentralised government made up of workers' and soldiers' councils by forming into groups such as the *Novembergruppe* (November Group) and the later *Arbeitsrat für Kunst*.[13] In the founding manifesto for later organisation, Taut promoted a faith in the power of architecture to create a better future, a clear commitment to breaking down artificial divisions between the arts and argued for the architect to remain in control of the final design (1918: 16-19). Under Gropius' leadership, the *Arbeitsrat für Kunst* continued to strive for reform by organising exhibitions and working to conceive a new German architecture. For his colleagues, the model for this new architecture was embodied in a unity of the arts as a single structure – the Gothic cathedral.

As early as 1914, Taut proposed the Gothic cathedral as the greatest example of a new unification of the arts (1914: 174-5). In the postwar period, Taut revived this idea of synthesising the arts as a major component of *Ein Architektur-Programm* that he wrote as director of the *Arbeitsrat für Kunst*.[14] When Gropius later took over as director, he again used the image of a cathedral in the pamphlet for the April 1919 *Ausstellung für unbekannte Architekten* (Exhibition of Unknown Architects) (Franciscono 1971: 146-7). Here, Gropius echoed Taut's original call for "architects, sculptors and painters" to break down the barriers between the arts and be unified as the "architect" whose work, he explained, would create a Total Work of Art as the *Zukunftskathedrale* (Gropius 1919). In a speech delivered to the Bauhaus students three months later, Gropius claimed that the aim of their work was to create this *Zukunftskathedrale* as a crystalline expression of a spiritual idea that would metaphorically radiate its light into the design of objects for everyday life (July 1919). It was this conception of the *Zukunftskathedrale* that Lyonel Feininger synthesised into his famous woodcut for the cover of the 1919 *Bauhaus Manifesto* (Periton 1996: 189-205). A few years earlier, Gropius described the work to be created in the new Bauhaus academy as "impregnated with an intellectual Idea – with form".[15] The conviction that one structure could embody all the various arts as the unity of transcendental Idea and physical form ties Schwitters' Haus Merz to the *Zukunftskathedrale* of Gropius, Taut and Feininger.

10 Dietrich reinforces this observation (Dietrich 1993: 171).

11 See Elderfield (1985: 113-4); Gamard (2000: 74-76); Dietrich (1993: 170); Schmalenbach (1967: 129 and 184).

12 Weinstein (1990: 1-25); Rigby (1993: 173-4); Boyd Whyte (1982: 95-102).

13 The programs and writings of individuals involved in these groups emphasised the spiritual revolution of art and a symbiotic relationship with the worker. See Taut (1918); Gropius (1919: 134-6) and Behne (1919: 2).

14 For a discussion of Taut's *Ein Architektur-Programm* and his involvement in the *Arbeitsrat für Kunst* see Whyte (1982: 99-102).

15 Walter Gropius, paper sent to Grand Ducal Saxon Ministry in Weimar in January 1916. After Periton, 190, n. 5.

Shortly after the *Arbeitsrat für Kunst*'s acceptance of the Total Work of Art as the model for the new German architecture, Schwitters identified a comparable aim underlying his own work.

> My aim is the *Merzgesamtkunstwerk* that embraces all branches of art in an artistic unit. First I married individual categories of art. I pasted words and sentences into poems in such a way as to produce a rhythmic design. Reversing the process, I pasted up pictures and drawings so that sentences could be read in them. I drove nails into pictures so as to produce a plastic relief apart from the pictorial quality of the paintings. I did this in order to efface the boundaries between the arts. (1921: 7)[16]

Notwithstanding their similarities, Schwitters was not a member of the *Arbeitsrat für Kunst* nor can it be certain that he had any familiarity with its members or Gropius' *Zukunftskathedrale* when he invented Merz in December of 1918. Conversely, Curt Germundson locates the beginnings of the cathedral theme in Schwitters' Merz *oeuvre* to the early part of 1918 through his exposure to German Romanticism and his introduction to Wilhelm Worringer's concept of abstraction and empathy (Germundsen 2007). Yet, it is hard to imagine that Schwitters' sudden identification of the cathedral and total work of art as important themes in his Merz *oeuvre* during 1920 were merely a coincidence. During the opening of his first Merz exhibition at the Berlin Sturm Gallery, Schwitters would have become familiar with members of the *Arbeitsrat für Kunst* and Gropius' newly founded Bauhaus School. Since 1914, the Sturm Gallery enjoyed the patronage of Taut and his *Arbeitsrat für Kunst* cofounder, Adolf Behne, when, after the end of the world war, it became a source of faculty for Gropius' new Bauhaus school, including Feininger, Johannes Itten, Wassily Kandinsky, Paul Klee and Oskar Schlemmer. Two months before writing an article on Haus Merz, Spengemann published a review of Taut's book *Die Stadtkrone,* which is probably where Schwitters became familiar with Taut and his work in the *Arbeitsrat für Kunst*. Later, Taut himself must have recognised the relevance of Schwitters' Merz architecture to his own aims when he invited Schwitters to contribute the short article "*Schloss und Kathedrale mit Hofbrunnen*" (Castle and Cathedral with Courtyard Well) for the spring 1922 issue of his architectural journal *Frühlicht* (Schwitters 1922: 87). In his article, Schwitters sought to extend his Merz method of assembling found materials into art as an approach for architects to employ in creating a new German architecture as a *Gesamtkunstwerk*.

Within a year after his first Merz exhibition, he began to explore the cathedral theme in a small book of eight lithographs from 1920 entitled *Die Kathedrale* (The Cathedral). Schwitters did not include a religious structure on its cover, but a hastily drawn flat-roofed industrial mill. That Spengemann published his review of Haus Merz in the previous month indicates that Schwitters' model and portfolio were exploring similar themes. Yet, compared to the lithographs of *Die Kathedrale* that depict abstract compositions of hand-drawn wheels, coffee grinders, clocks, windmills and words, and stamped or printed materials, Haus Merz is a model of architecture that challenged a normative practice of using solid mass models for its conception.

By the late nineteenth and early twentieth centuries, the use of solid wood, clay or plaster massing models to study the relationships of exterior building forms was a common practice among architects in Germany (Schreiber 1982: 91 and 95 ff.). In addition to conventional techniques, plaster models were also used by avant-garde architects including Taut, Gropius and Hans Poelzig.[17] In these instances, the plaster model required that the architect already had an idea of a proposed

16 With my inclusion of "*Merzgesamtkunstwerk*", this ET by Manheim in Schwitters (1981: 407).

17 Mass models are pictured in the fourth issue of Taut's architectural journal *Frühlicht* between 1920-23. See also Emmons and Mindrup (2008: 44-45).

Fig. 4 Hans Poelzig (1921). Plaster model of *Wegkapelle* (Roadside Chapel) [Photo: Badisches Landesmuseum, Karlsruhe, Germany]

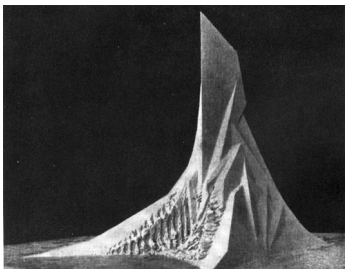

Fig. 5 Wassili Luckhardt (1920). *Konzerthaus Modell* (Model of a Concert Hall) [Photo: Public Domain]

project so that the forms of the model could be accurately fashioned to represent it. Unlike members of the *Arbeitsrat für Kunst* who viewed their modeling materials as impregnated with an intellectual Idea of architecture, the found objects Haus Merz proposed were already transformed into something and would hinder the 'impregnation' of any predetermined idea on them. Like his contemporaries Wassili Luckhardt and Herman Finsterlin, Schwitters' Merz architecture fostered the use of modeling materials to inspire new architectural ideas.[18] This concept of architecture as a unity of material and intellectual Idea was an important attribute of Haus Merz that Schwitters sought to affirm.

When Schwitters gave his only description of Haus Merz as "his first piece of Merz architecture", he repeated almost verbatim what Spengemann, had written about it in "Merz: die offizielle Kunst":

> I see in *Haus Merz* the cathedral: the Cathedral. Not the church building, no, the building [*Bauwerk*] as an expression of a truly spiritual intuition [*Anschauung*], of the kind that raises us to the infinite: absolute art. This cathedral cannot be used. Its interior space is so filled with wheels that people cannot find space in it ...this is absolute architecture, with an exclusively artistic sense. (Schwitters 1921: 6)[19]

In this instance, Spengemann interpreted Haus Merz not as the description of an architectural form, "the church building", but as a work of "absolute architecture" that had only an "artistic sense". As Spengemann suggested, Haus Merz is "not the church building" in the literal sense, but the "expression" of a "spiritual intuition" he called "the Cathedral". Elizabeth Burns Gamard argued in her book, *Kurt Schwitters' Merzbau,* that Spengemann's interpretation of Haus Merz as an "expression of a truly spiritual intuition, of the kind that raises us to the infinite: absolute art" had parallels with the "anagogic perspective of Gothic cathedrals and Romantic art" (2000: 76). During the twelfth century, Abbot Suger gave one of the most celebrated descriptions of this anagogic function for Gothic art and architecture that caused him to "reflect, transferring that which is material to that which is immaterial" and to be "transported from this inferior to that higher world in an anagogical manner" (1979: 46-49 and 64-65). This perception of art and architecture essentially derived from a dictum attributed to the early Christian theologian, Origen of Alexandria, that "the visible world contains images of heavenly things in order that by means of these lower objects we may rise to that which is beyond" (Origen 1973: 278-9). During the nineteenth century, early German Romantics attributed a similar function to art as a guide for the perception of immaterial archetypes becoming in nature.[20] Conversely, Schwitters' Haus Merz and Spengemann's interpretation of it were not based on a Christian conception of the immaterial in cathedral architecture but an extension of the anagogical interpretation to the imaginative conception of the *Zukunftskathedrale* in the assemblage of found objects.

For his review of Taut's book, *Die Stadtkrone* from 1920, Spengemann underlined the spiritual role that a cathedral should embody during the early twentieth century, arguing that "it is not anymore the time to build churches and temples", but instead a "new art" should be created that would replace "religious thought" with the secular thought of socialism (Spengemann April 1920: 15). Schwitters, who was familiar with Spengemann's book review, frequently wrote about the spiritual role of the found objects in his Merz *oeuvre* not as a representation of Suger's "higher world" or Origen's "heavenly things", but as a set of criteria for making new architecture. For Schwitters, the selection of found objects depended

18 For the materials and methods these individuals employed in making their models, see Mindrup (2007: 34-5).

19 See also Spengemann (1920: 40-41).

20 For a summary of these concepts, see "*Die dritte Stufe der romantischen Theorie*" in Walzel (1908: 37-65).

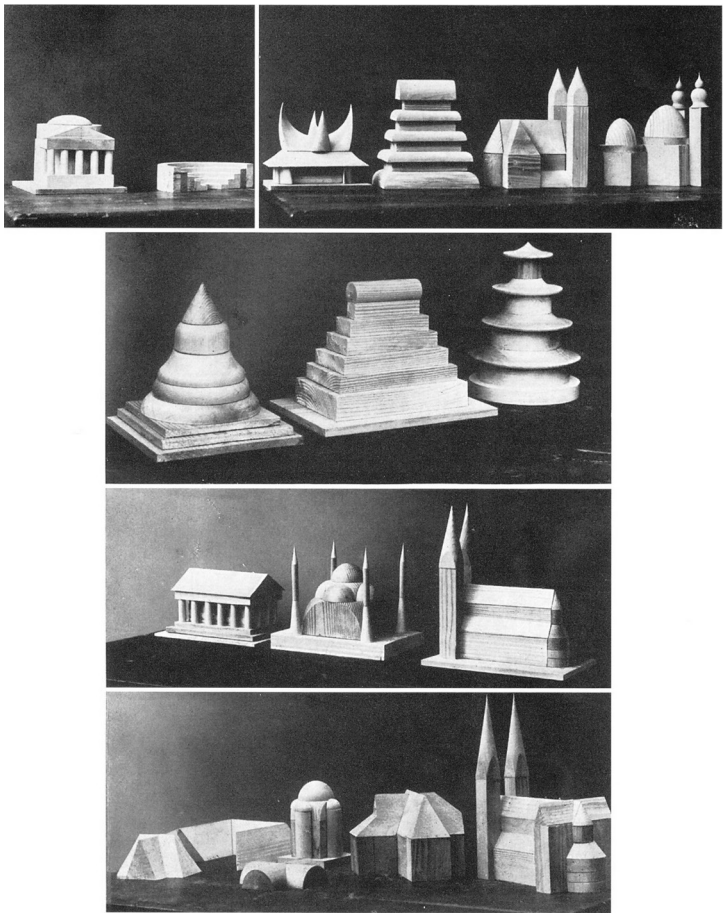

Fig. 6 Herman Finsterlin (1916). *Stilspiel* (The Play with Styles) [Photo: © 2013 Artists Rights Society (ARS), New York / VG Bild-Kunst, Bonn]

upon "the demands" of a picture, since art was an invisible, immaterial "*Urbegriff* (archetypal concept) elevated towards divinity" that came about as a unique combination of "lines, forms, and colors" (Schwitters 1921: 5). The determination of this "archetypal concept" in a work of art was very different from the Gothic and Romantic perspective of immaterial ideas that were transcendental and *a priori*. For Schwitters, it was not the visible appearance of a small cathedral itself that was the primary concern in making Haus Merz, but how the assemblage of a button, spinning top, and gears describe the interpretation of found materials as art or architect. By including a set of gears in the nave of Haus Merz, Schwitters was reinforcing his coupling of a mill with a religious structure in his *Die Kathedrale* portfolio of lithographs. Schwitters' pencil and watercolour drawings from the same period reveal that the mill was an important theme in his work, and was used to describe the creative transformation of found objects in a Merz work.

The Merz mill

Shortly before his creation of Haus Merz, Schwitters frequently depicted gears, people and windmills in watercolour and stamp drawings to describe the transformation of discarded materials into Merz art and architecture. Of the drawings that Schwitters produced between 1919 and 1923, the gears that he included in his stamp drawings and watercolours from 1919, closely resemble the one in *Ohne Titel: Ferienkolonie für Taubstumme* (No title: Vacation colony for deaf-mutes) from the same year.[21] In the case of the stamp drawing, *Ohne Titel: mit Rot vier*, the circular impressions are comparable to those in *Ohne Titel: Ferienkolonie für*

21 See for instance *Ohne Titel: mit Rot vier* and *Aq. 9: Windmühle* (Water Colour 9: Windmill) from 1919.

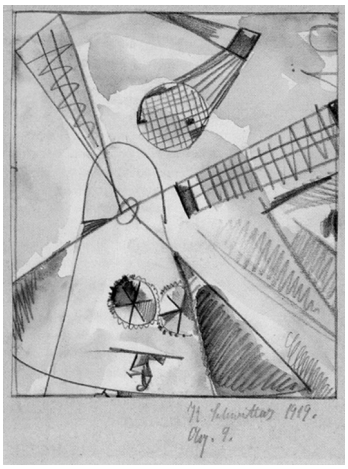

Fig. 7 Kurt Schwitters (1919). *Aq. 9: Windmühle* (Water Color 9: The Windmill) [Photo: Kornfeld Collection, Bern, Switzerland © 2013 Artists Rights Society (ARS), New York / VG Bild-Kunst, Bonn]

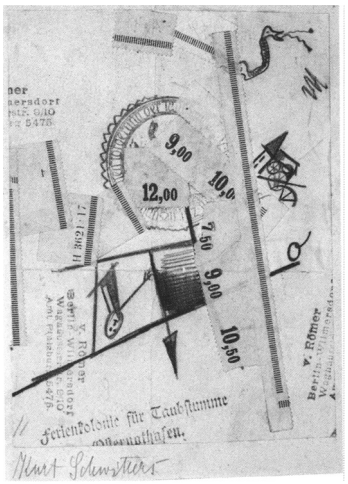

Fig. 8 Kurt Schwitters (1919). *Ohne Titel: Ferienkolonie für Taubstumme* (No Title: Vacation colony for deaf-mutes) [Photo: Galleria Blu, Milano, Italy, © 2013 Artists Rights Society (ARS), New York / VG Bild-Kunst, Bonn]

Taubstumme that are not gears in themselves, but Schwitters adds spokes and teeth to them.[22] Compared to the other objects depicted in *Aq. 9: Windmühle*, Schwitters partially shaded the triangular spacing between the spokes of a set of gears that bear a striking resemblance to those in a 1917 logo for the German Bavarian Motor Works (BMW), inspired by the propeller of a plane in motion. In a separate watercolour from 1919, *Aq. 10: Ich mühle, du mühlst, er mühlt* (Water Colour 10: I mill, you mill, he mills), Schwitters makes a concrete association between a mill and a person by suggesting that he and everyone else are active "mills". Likewise, on a 1921 postcard to Walter Dexel, Schwitters placed the pie-shaped wheel motif found in Aq. 9: Windmühle directly on his forehead denoting the location of this milling in his mind.[23]

The repeated inclusion of coffee and windmills in Schwitters' drawings should not be seen as the copying of an artistic motif popularised by Marcel Duchamp and Francis Picabia, or as the mere inclusion of a familiar object from his daily life into art. Instead, the "mill" motif in Schwitters' drawings is an indication of his interest in mills that transform raw substances (grain and coffee beans) into material necessary for making something new (bread and coffee).

With the development of a windmill pictogram in 1923, Schwitters sought to synthesise his mediations on the transformation of found objects as an essential description of his Merz art and architecture. He first used the pictogram on the title page of the 1923 "Holland Dada" issue of his magazine *Merz* between the words "Holland" and "Dada". The drawing consists of a black square surmounted by a diagonally rotated cross in which the spaces between the arms are filled with the letters "DA". This image recalls the windmills frequently seen on Dutch landscapes and in Schwitters' watercolour drawings. Schwitters continued to use his windmill pictogram in an advertising poster for his magazine *Merz* from 1923 that included the word "MERZ" below the black square and again in the January 1924 issue in which the letters "DA" and word "MERZ" were removed. In this manifestation, Dada art is the wind that moves the four sails to turn Merz, the mill. As a windmill, the Berlin Dada activities that "began by shocking the bourgeois, demolishing his idea of art, attacking common sense, public opinion, education, institutions, museums, good taste, in short the whole prevailing order" compare to the gusts of wind moving the propellers (Janco 1971: 36). The propellers drive the mill, or the imagination, to destroy the immaterial, conventional meanings of the objects Schwitters assembles in a Merz work. However, unlike the Dada wind that only destroys, the original identities of the found objects Schwitters collects are milled to become material for new Merz art.

In "*Merz*", Schwitters began to develop a comparison between the interpretations of a found object as art or architecture and the workings of a mill. For Schwitters, the extraction and reinsertion of a found object from one context to another was likened to the assemblage and re-assemblage of words in a poem: "As in poetry, word is played off against word, here factor is played off against factor, material against material." (1921: 7)[24] Three years later, in the *"Die Bedeutung des Merzgedankens in der Welt"* (The Meaning of the Merz-Thought in the World), Schwitters elaborated on this comparison and explained how "in poetry, words are torn from their former context, *entformelt* (dissociated) and brought into a new artistic context, they become formal parts of the poem, nothing more" (1923: 8-11).[25] Here, the disassociation of an object from its original context was an important step in making Merz work. For Schwitters, all materials had an "individual character" or *Eigengift* – as streetcar tickets, cloakroom checks, bits of wood, wire, twine, bent wheels, tissue paper, tin cans, chips of glass, for example – that had to be lost as

22 *Ohne Titel: Mit Rot vier* and *Aq. 9: Windmühle* are also similar in that both gears and a windmill appear in the same drawing, although in *Aq. 9: Windmühle,* the gears are not separate from the windmill but, as in *Haus Merz* and the church in *Ohne Titel: Ferienkolonie für Taubstumme,* are integrated into its base.

23 This postcard is variously titled "Gears" by Dorothea Dietrich or "Pleasure Gallows" in the exhibition catalog *Kurt Schwitters: Merz – a Total Vision of the World.* See Dietrich (1993: 159, fig. 83) and Schwitters (2004: 53, cat. 153).

24 ET by Manheim in Schwitters (1981: 407).

25 ET by Elderfield (1985: 43).

they were assembled into a Merz work.[26] This does not mean that the objects must disappear but that "by being evaluated against one another" their "individual character" is "dematerialised" (Schwitters 1923: 8-11). Consequently, the *Eigengift* of found objects was not something material but immaterial, and could be lost while the physical objects, "as they are", did not change. In this way, Schwitters' "dematerialisation" of the immaterial *Eigengift* of a found object compares allegorically to the milling of grain into flour. In the same way wheat is milled into flour to bake bread, so is the *Eigengift* of a found object "dematerialised" in the architect's imagination so that it can be used as material to make Merz art or architecture.

Conclusion

Schwitters created Haus Merz during a period in German architectural history when his peers at the Berlin Sturm Gallery embraced the crystal of Taut and Gropius as a metaphor for the construction of a new post-war German architecture. Like his colleagues in the *Arbeitsrat für Kunst,* Schwitters conceived architecture as a combination of material and immaterial idea. Yet, unlike Gropius and Taut, whose new architecture would become a medium for the exploration of architecture as impregnated with an intellectual Idea, the found objects Schwitters' cathedral proposed to use would hinder the imposition of any pre-determined idea upon them. As his 1919 watercolour drawing *Das Herz geht von Zucker zum Kaffee* (The Heart Goes from Sugar to Coffee) indicates, Schwitters had a strong preference for milled over crystalline substances. Rather, Haus Merz emerged during a period of time in Schwitters' *oeuvre* when he was exploring the metaphor of a mill in his drawings and watercolours to describe the interpretation of an immaterial content for the found objects that he could use as material for creating art or architecture. By including a set of gears in the nave of Haus Merz, Schwitters created it not as a description of the effect his cathedral would have on the making of a future architecture but as a model for the use of materials to inspire new architectural ideas.

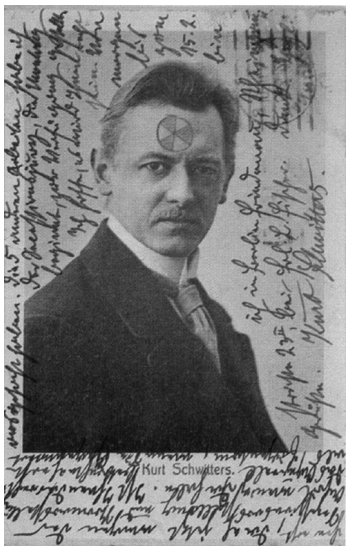

Fig. 9 Kurt Schwitters (1921). *Portrait Postcard to Walter Dexel* [Photo: Galerie Gmurzynska, Zug, Switzerland, © 2013 Artists Rights Society (ARS), New York / VG Bild-Kunst, Bonn]

Fig. 10 Kurt Schwitters (1923). *Drawing for the title page of Merz 1: Holland Dada* [Drawing: © 2013 Artists Rights Society (ARS), New York / VG Bild-Kunst, Bonn]

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26 Schwitters gave these objects as examples. Schwitters (1923: 8-11).

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Labour matters: The politics of materials and making in architecture

Cathy Smith

Introduction: Thinking and engaging matter

In architecture, many recent material-based discourses focus on the way in which digital drawing and fabrication technologies facilitate experimentation with the formal and affective capacities of materials, particularly through the use of 1:1 scale prototyping. Yet, there is often minimal discussion of the ontological and socio-political issues embedded within these practices; nor how these methodologies might challenge or disrupt established assumptions about materials and, in particular, the organisation of labour during the fabrication process. If the architectural discipline is to aspire to an "inclusive architecture" based on a reconsideration of matter and materials (Borden and Meredith 2012: 2), then it is also crucial to consider all aspects of practice – including labour. To unpack these issues in more depth, the paper refers to French philosopher Gilles Deleuze and psychoanalyst Félix Guattari's critique of the philosophical model of form and matter known as "hylomorphism" and the association of this notion with the segregation of intellectual and manual labour in Western society, including architectural practice. They argue that the hylomorphic concept can be associated with a broader sense of hierarchy within Western philosophy: prompting a way of thinking based on "a society divided into governors and governed, and later, intellectuals and manual laborers" (Deleuze and Guattari 2004: 407). Their association of hylomorphism with classical Western philosophy establishes a specific theoretical context for the present paper.

This paper engages with specific philosophical conceptions in order to draw attention to some problematic assumptions about materials and labour that remain largely unexamined in architectural discourse. The focus is on discourses – philosophical and architectural – that explicitly confront the segregations between form and matter, and designing and making, with a specific concentration on the post-millennium milieu. Examples of contemporary material-focused discourses will elucidate the conceptual relation between materials and making in architecture – including texts by Lisa Iwamoto, Katie Lloyd-Thomas and Bernard Cache. In particular, this paper aims to make explicit that the ways in which materials are conceived and deployed in architecture can support or disrupt established conceptual hierarchies – not only with respect to conceptions of form and matter, but also to making, particularly labour.

Contemporary material-focused thinking within the architectural field

In her text *Digital Fabrications: Architectural and Material Techniques*, architect and academic Lisa Iwamoto suggests that "digital media and emerging technologies are rapidly expanding what we conceive to be formally, spatially, and materially possible" (2009: 4). Many of the project examples within this text involve experiments and 1:1 scale prototyping using CAD-CAM (computer-aided design / computer-aided manufacture), CNC (computer numerical control) fabrication tools, robotic assembly and other digitally-enhanced production technologies. The projects are similar in positioning a specific material or fabrication technology as the primary generator of architectural form. This focus on form and materials does not necessarily preclude other considerations, such as functional

building programme, building typology, project budget and so forth – a point reinforced by architects Jesse Reiser and Nanako Umemoto in their 2006 text *Atlas of Novel Tectonics* (2006: 90). In Iwamoto's words, these projects: "capitalize on material methods as a generator for design" (2009: 7). The projects in *Digital Fabrications* are also invested with concerns that are "the purview of the low arts or crafts" (4). In both "low-tech" and digital production methodologies, the designer may be more directly involved in the making of an artefact or building component than in mainstream professional practices, where the designer operates independently of the fabricator and/or fabrication process.

The focus on materials, fabrication and form within *Digital Fabrications* typifies a reinvigorated interest in materiality within contemporary architectural discourse[1] that frequently concentrates on the potential of materials for experiments with "perceptual, spatial and formal effect" (4). The term "material" is often used as synonymous with "building materials" (Lloyd Thomas 2010: 5) and with only minimal interrogation of its philosophical, ontological and epistemological meanings outside of the architectural discipline. For example, Borden and Meredith's comprehensive text *Matter* is explicitly concerned with a conception of materials as distilled from specifically architectural practices and debates (2012: 2-3). They identify a "socio-ecological shift" in architecture prompted by the Industrial Revolution, and the consequent widening in scope and availability of the architect's "*palette* of materials" (1). This concern with architectural materials reinforces, rather than challenges, the traditional focus on the usefulness of materials in architectural form-making and ignores "the cultural and political issues that an engagement with the material might yield" (Lloyd Thomas 2007: 7-8).

Historically, the Industrial Revolution prompted significant changes to traditional production methodologies. This, in turn, generated considerable debate about the attendant issues of labour and craft – as for example in John Ruskin's and William Morris' writings.[2] It is important to note that there is little discussion about how digital production methodologies might challenge or disrupt habitual assumptions about interrelations between design, fabrication processes and the organisation of labour. To some extent, this lack of interest on the form-matter-labour relation may be attributed to the prevalent focus on the capacities of actual or 'real' materials as a primary generator of architecture and architectural thinking, which testifies to the "desire to construct an inclusive architecture through matter" (Borden and Meredith 2012: 2). Yet, any ambition for a materially-inclusive practice becomes potentially problematic if this discourse excludes other conceptual, social and economic concerns that are intrinsically bound to engagements with matter. Architectural theorist Lloyd Thomas argues that unless the *conception* of materials and their formations in architecture is explicitly addressed, new production methodologies may simply extend and replicate existing hierarchical assumptions – particularly form's conceptual dominance over matter (2007: 7-9). Accordingly, the paper takes as its focus the conceptual relation between materials and labour as it is engaged in specific examples of philosophy and particular contemporary examples of architectural discourse.

The division of labour and architecture

Any examination of the notion of labour must proceed with some qualification about how the term is deployed. "Labour" appears to be a particularly nebulous term which refers to the productive aspects of any endeavour: put quite simply, labour generally refers to "work". In architectural discourse, labour might simultaneously invoke physical work or labour involving direct contact with materials

1 Jon Goodun and Karin Jaschke's introduction to a 2012 issue of *Architectural Design* concerned with material resources refers to the "new, materialist mode of practice" in architecture. Other material-focused texts include: Robert Sheil's 2005 *Design Through Making;* Kolarevic and Klinger's 2008 *Manufacturing Material Effects: Rethinking Designing and Making in Architecture*, and; Gail Peter Borden and Michael Meredith's 2012 *Matter: Material Processes in Architectural Production*. Asterios Agkathidis' 2010 edited text *Digital Manufacturing in Design and Architecture* also explores the relation between digitally-enhanced design methodologies, materials and fabrication processes, but there is arguably still a primary conceptual focus on form-making and the "devices which helped to rationalise and systematise the production process of complex geometries" (Agkathidis 2010: 4). The recent 2013 Australian Institute of Architects' annual conference, titled *Material*, was dedicated to the same theme (Australian Institute of Architects 2013).

2 This discourse includes the discussion of handcraft and manufacture elaborated within art critic John Ruskin's 1849 text *The Seven Lamps of Architecture* (1907); and William Morris' 1891 lecture 'The Influence of Building Materials upon Architecture' (1996). These discourses do not necessarily directly invoke the philosophical distinctions between form and matter discussed in the present paper, but they do establish a precedent for discussing the notions of labour and making with respect to fabrication and construction in architecture.

– for example, the work done by builders on a construction site – and intellectual or work or "thinking", such as thinking about the shape and assemblage of buildings away from the construction site. In reality, the segregations between different types of labour may seem artificial: one could easily argue that architectural drawing concurrently involves intellectual and manual work. For the purposes of clarity, the present paper will refer to and differentiate between "intellectual" and "manual" labour, as Deleuze and Guattari do within *A Thousand Plateaus* (2004: 407).

It is the hierarchical distinction between intellectual and manual labour that appears to be of significant concern to Deleuze and Guattari with respect to their discussion of form and matter in *A Thousand Plateaus*. For them, labour is associated with the segregation, classification and quantification of any productive human activity: specifically, "labor is the quantitative comparison of activities" (489). If labour can be separated, measured and potentially "stockpiled", a financial and political value can be ascribed to or extracted from it (Bonta & Protevi 2004: 103). Accordingly, segregation and division is at the core of any notion of labour. In the words of sociologist Richard Sennett: "[t]he division of labour focuses on parts rather than wholes" (2008: 47). Instead of focusing on social or political causality, Deleuze and Guattari turn to the conceptual relation between form and matter as the generator of the division of labour. They are highly critical of the philosophical model of the form-matter relation known as hylomorphism, which distinguishes between the concepts of form and matter. Hylomorphism produces a sense that matter is passive and devoid of any formal or organisational capacities of its own; it requires form to be "imposed" upon it. By segregating the notion of form from matter, and by suggesting that form dominates matter, hylomorphism may invoke and promote a broader sense of hierarchy (Simondon 2007: 10; Deleuze & Guattari 2004: 407). While the present paper focuses on Deleuze and Guattari's more contemporary problematisation of hylomorphism, it is important to note that the notions associated with hylomorphism have been ingrained in thought since the origins of Western philosophy. For example, *Timaeus and Critias* outlines Plato's belief that all matter of the world is an approximation (albeit imperfect) of idealised, perfected forms which exist in the realm of the spirits and beyond the everyday material world (Plato 1977). The inextricable relation between form, materials and labour is also discussed by French philosopher Gilbert Simondon, to whom Deleuze and Guattari refer. In his text *The Individual and Its Physico-Biological Genesis*, Simondon suggests that the hylomorphic model of form and matter underpins the idea of "social hierarchy" (2007: 10) and the hierarchical thinking typical of Western thought. In the words of geographer Mark Bonta and philosopher John Protevi, the form-matter duality is "the viewpoint of a master commanding slave labour" (2004: 97). Drawing from Simondon, Deleuze and Guattari also suggest that the duality established between form and matter is part of a broader world view relating to "the organisation of work and the social field through work" (2004: 407).

The form-matter model elaborated within *A Thousand Plateaus* is part of a larger discussion about different models and approaches to life, invoked through specific examples drawn from construction and architecture. They identify two fundamentally different approaches to the building of Gothic cathedrals in the Middle Ages, based on different conceptions of the form-matter relation. The first approach, termed State or royal science, is directly associated with a hierarchical conception of form and matter. It also appears to be associated with architects (Deleuze and Guattari 2004: 406-7; Protevi 2001: 131; Bonta and Protevi 2004: 53). Royal or State science involves applying general rules and abstract models and theorems derived from "real-life" experience (Deleuze and Guattari 2004: 412).

The State approach aims for "a fixed model of form" and involves "templates", maths and other quantifiable measures (402). The second approach, nomad science, involves discovering and responding to particular problems encountered in "real-life" situations and sites (406-7, 412). As described by Deleuze and Guattari, nomadic builders or Gothic "journeymen" would travel across the land to cathedral building sites, drawing from experience and intuition rather than following wholly predetermined building plans, representational drawings or engineering calculations (406). Consequently, there was no discernible differentiation between intellectual and manual labour, nor a hierarchical approach to materials and their formations. These nomadic builders or journeyman were organised, but operated independently of the State and its hierarchical and social models; as such, "the division of labour fully existed, but it does not employ the form-matter duality" (407). Thus the organisation of labour was not founded upon the sense of hierarchy associated with the State science model:

> The State's response was to take over management of the construction sites, merging all the divisions of labour in the supreme distinction between the intellectual and the manual, the theoretical and the practical, modelled upon the difference between "governors" and "governed". (Deleuze and Guattari 2004: 406)

In practical terms, advancements in drawing techniques in the late Middle Ages enabled skilled draughtsmen to design entire buildings prior to their construction by separate builders. Architectural theorist Edward Robbins suggests that these advancements in drawing were largely responsible for "the social division of labour within architecture" (1994: 16). Thus architecture became a specialised, intellectual pursuit based in studios and distinct from the messy manual work involved in construction. In Deleuze and Guattari's words: "[t]he ground-level plane of the gothic journeyman is opposed to the metric plane of the architect, which is on paper and off site" (2004: 406). Most importantly, Deleuze and Guattari argue that this hierarchical division of intellectual and manual labour stems from a conceptual schema that presumes that materials receive their form from the master-architect. Indeed, it has been suggested by architects Jesse Reiser and Nanako Umemoto that architectural practice is premised on the belief that "matter is formless and geometry regulates it" (2006: 88). Accordingly, intellectual labour (design) is generally associated with architects and architectural studios: manual labour (construction) is associated with building contractors and manufacturing workshops.

The digitisation of labour

Engaging with materials in a more heterarchic and "inclusive" manner should also prompt a critique of the attendant organisation of labour in building practice. Contemporary discussions about digital fabrication techniques tend to focus on the self-organisational capacities of materials and associated technologies, without explicitly discussing the distribution of labour during the design, fabrication and assembly project phases. Yet digital production technologies have the capacity to introduce material parameters, production costs and techniques into the digital model (Agkathidis 2010: 4). As such, parameters relating to the deployment of labour could be explicitly considered alongside material capacities. Digital drawing and fabrication technologies can improve the connection between drawings and material fabrication by introducing a direct relation between both; as seen in the example of the CNC router machine which fabricates building components in direct reference to a CAD drawing. There are still inevitable, albeit potentially productive, fissures between what is drawn and what is constructed, particularly

when human fabricators post-assemble robotically-produced components. Iwamoto does not specifically address the issue of the organisation of labour within digital production methodologies, but she does suggest that there is an inevitable schism between digital visualisation and the subsequent "modes of making" (2009: 4) or assembly.

In a 2010 essay, practitioner, theorist and digital-innovator Bernard Cache engages with the socio-political issues of digitisation and assembly more directly. He criticises the discourse on digital production methodologies for its primary focus on form and universal aesthetics – the "formal curvy-broken style" (2010: 55) – at the expense of other social and cultural concerns. Cache associates the limitations of digital production discourses in architecture with a broader tendency to ignore the social and cultural aspects of computers and computerisation (53). For Cache, this is not a failure of digital production technology per se, but a problem of its theorisation and application. He suggests that it is possible to use CAD-CAM in such a way that it could be tailored to address urban issues and social problems by focusing on how architectural components could be deployed or customised to suit "to the specificity of projects, independent of all formal research" (60). While he does not discuss specific examples for the organisation of labour, he does imply that the manufacture and assembly of digitally-fabricated components can be customised for particular projects such that making and assembly might become equally important concerns alongside building shape and form.

The problem of generalising and anticipating material performance is a key aspect of Deleuze and Guattari's critique of the hylomorphic schema (2004: 451). Whether digital or not, architectural "blueprint" drawings and specifications predict probable behavioural tendencies of materials and their combinations. However, on site, there is usually some degree of deviation, however small (Willis 1999: 225; Alexander 1979: 461-462). Even the most basic specifications tend to acknowledge that there are subtle differences and variations in materials otherwise classified as belonging to a single material type or category (Lloyd Thomas 2010: 52). A case in point is the specification and contract documentation used to construct the experimental Stock Orchard Street house in London (2004), by architects Sarah Wigglesworth and Jeremy Till. Due to the unique material combinations used in this house, the documentation specified not only materials, but included diagrams prescribing their on-site fabrication, such as the design and operation of the scaffolding needed to assemble the unconventional sandbag wall insulation (Lloyd Thomas 2010: 176). They explicitly acknowledged that the fabrication processes involved both material performance and on-site labour, and that these determined the final architectural form (Lloyd Thomas 2010: 180). It is important to note that building contractors were involved in the erection and construction of the building on site.

The architect as manual labourer

The "design-build" methodology encompasses practices which deliberately integrate the activities of designing with those of fabrication because the designer or architect is also the builder or "labourer", and, sometimes, also the building occupant (Willis 1999: 223). This does not rule out the use of digital production methodologies, although discussion tends to focus on examples of vernacular construction, "low-tech" and small-scale technologies and encompasses a range of often poorly theorised practices including "DIY architecture", "self-build" (Willis 1999: 223) and "Live/Build" (Brand 1995: 202). While these practices may not be labelled materialist, the default integration of designing with making focuses

attention on material capacities. The design-build methodology in architectural education is often associated with specific North American architecture schools, including the Yale Building Project initiated by Charles Moore and Kent Bloomer in 1967; and Samuel Mockabee's Rural Studio based at Auburn University, Alabama (Sokol 2008: 2). Self-build or Live/Build projects associated with professional architects are routinely referred to as "DIY Architecture" whereby the architect also acts as the builder and building occupant (Smith 2012).

The design-build methodology is often positioned as a way of overcoming the anachronism between architects, builders, clients and building users (Willis 1999: 223). As such, materials tend to be engaged as a secondary and pragmatic concern – in terms of their capacity to be used and shaped, for example - rather than being a core conceptual focus. Nevertheless, projects constructed using self-build methodologies tend to evolve incrementally in response to changes encountered on site, and therefore the self-organisational capacities of materials are arguably an important characteristic of this methodology (Brand 1995: 202). North American critic and writer Stewart Brand invokes the metaphor of "tailored clothing" to characterise self-build projects which are "fine-tuned" to suit their occupants over time (1995: 202). Not only are the specific capacities of individual materials embraced, but also their interrelation with other material conditions and systems. Design-build or self-build projects tend to be of a smaller or residential scale, and are less relevant as a production methodology for larger scale building typologies and contemporary manufacturing contexts. Architect Christopher Alexander and his colleagues have argued that it is possible to construct larger projects using a smaller-scale building approach through decentralised governance and "piecemeal growth" (Alexander, Silverstein, Angel, Ishikawa & Abrams 1975: 67). Projects are seen to be shaped by the coalescence of multiple influences that often vary over time, including material availability, costs, weathering and so forth; an approach that resonates with Deleuze and Guattari's invocations of nomad science and the attendant blurring of intellectual and manual labour. For nomad scientists, any transformation of matter from one state to another is seen to occur through dynamic encounters and interactions with other forces and, as such, it is difficult to think of matter being passive or disassociated from labour, other materials, tools, techniques and processes: "it is matter in movement, in flux, in variation" (Deleuze and Guattari 2004: 451; Smith 2012: 144).

The labours of matter itself

A key characteristic of the design-build methodology is the way in which manual labour is intentionally integrated into design processes. The designer-maker exhibits a "willingness to learn from his materials" (Willis 1999: 227). While certain construction technologies such as timber framed construction can be easily adjusted by self-builders in reaction to changes in project conditions, advanced materials may possess the enhanced capacity to self-identify building problems or issues and self-adjust over time; capacities that could be embedded in projects of any scale or type. In his discussion of the self-build approach, Brand refers to new "[s]elf-sensing and self-healing" materials and technologies – such as concrete that self-repairs and cleans in reaction to changing environmental conditions (1995: 221). As such, the materials themselves provide the "manual" labour normally associated with maintenance workers, in addition to possessing the "intellectual" capacity to identify and respond to environmental changes (however limited this capacity may be). Thus the low-tech, hands-on building approach involving self-building could be augmented by new materials with "biological or nano-computerised sensitivity" (221). Brand's observations draw attention to the radical

possibilities of contemporary biomaterials and nanotechnologies to radically alter the division of labour within a project site, even if he specifically refers to building maintenance and upkeep. In Brand's example, the human labour usually required for particular maintenance activities can be replaced by the self-sensing and self-adjusting matter itself.

Another example concerned with the potential of new biomaterials to revolutionise labour and construction practice can be seen in the 2009 TED talk by academic Rachel Armstrong. Armstrong's visionary talk, titled *Architecture That Repairs Itself*, focuses on the potential deployment of "metabolic materials for the practice of architecture" (Armstrong 2009). Her interest is in material innovation, rather than the organisation of labour per se. However, there is an explicit reconsideration of the need for human manual labour in building practice, as Armstrong observes, particularly, because most buildings are constructed using "Victorian [era] technology" and "teams of workers" (Armstrong 2009). In collaboration with architect and academic Neil Spiller, Armstrong hopes to engineer a "living material" that can grow and repair itself, thus replacing the aforementioned "teams of workers". Their project, although still under development, involves the invention of a protocell-based metabolic material that can repair water-damaged and submerged foundations of timber buildings in Venice. The particular protocell species used is averse to light, and once deposited in the canal, attaches to the timber piles, potentially resulting in limestone accretion and the growth of a supportive "reef" that could prevent further foundational subsidence. Armstrong acknowledges that the protocell has its own self-organisational capacities, and refers to a "conversation" being enacted between the metabolic building materials and the natural environment (Armstrong 2009). To borrow Reiser and Umemoto's words: "matter proves to have its own capacity for self-organisation" (2006: 88). It is important to note that the protocell is still discussed as instrumental to the goals of the building project, rather than as a sentient independent identity in its own right.

A similar proposal was presented at the 2013 AIA conference *Material*, by Swiss architect and academic Matthias Kohler who discussed the interrelations between architect and robot during CNC production (Kohler 2013). Kohler argued that robots could be deployed to execute tasks that are difficult for humans to achieve, and vice versa. With reference to Deleuze and Guattari's critique of hylomorphism, it could be argued that the protocell material and the robot might be engaged in similar ways to conventional "architectural" materials – as "slave labour" (Bonta and Protevi 2004: 97) for the execution of formal concepts envisaged by the architect. If, as Iwamoto contends, digital practices can produce a "seamless connection between designing and making" (2009: 4), then this logic must arguably extend to all aspects and phases of an architectural project, including the more heterarchic organisation of labour within the construction site – regardless of whether this labour is metabolic, robotic, cybernetic, or human.

Thinking and making: Both "matter"

One might argue that labour's aesthetic invisibility within the architectural field contributes to its discernible absence within architectural and scholarly discourse. Materials have qualities that are readily transcribed into architecture and its visual representations; the organisation of labour may lack an obvious or equivalent architectural aesthetic, although labour has been ascribed an aesthetic form in art practice.[3] Moreover, any discussion of labour raises questions about authorship and the socio-political relations between architects, builders and materials. It is worth noting that very few publications refer to the essential contributions of

3 For example, since the late 1970s, the artist Mierle Laderman Ukeles has based her "Maintenance Art" performative and installation art projects on the notion of labour and its distribution. Her *Touch Sanitation* project of 1978-1980 involved the artist individually greeting sanitation workers. For further details see her 1969 *Manifesto for Maintenance Art*, 1969! *Proposal for an Exhibition "Care"* (Laderman Ukeles 1969).

builders and manual workers to architectural projects, nor have the perceptions of builders been reflected in architectural discourse. On the surface, contemporary digital fabrication technologies appear to challenge the habitual distinction between designing and constructing buildings because of the close alignment between the computerised drawing and digitally-enhanced fabrication technologies. Nevertheless, digitally-fabricated components must still be assembled within the actual project site and this assembly may be executed by a builder or a separate team of contractors acting under the direction of an architect, and in accordance with building blueprints. As highlighted previously, the establishment of closer ties between drawing and fabrication modes does not, in itself, challenge the customary hierarchies that govern approaches to form, materials and the "organisation of work and of the social field through work" (Deleuze and Guttari 2004: 407). To challenge these habitual practices and ingrained thought processes, it is important to confront fundamental assumptions about matter and materials in relation to the division of labour within the architectural discipline; irrespective of whether architectural processes involve analogue and/or digital production methodologies. Alongside the rapid advances in material and digital manufacturing, it is timely for architectural practitioners and theorists alike to reconsider not only the notion of manual labour, but the very labours of matter itself.

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Striped effects: The articulation of materiality and directionality in striped architecture

Ashley Paine

Introduction

The striped interior of Siena Cathedral is often described as a wondrous experience: the intensity of its black and white surfaces striking the viewer as both dazzling and disorienting (Fig. 1). It is also a remarkable demonstration of the psycho-perceptual effects of stripes, and their capacity to assert the physical and visual qualities of space in a dialectical interplay that oscillates between materiality and immateriality. This is to say that the banding of light and dark stone draws particular attention to the physical qualities of the building material – its thickness, mass and, above all, its colour – as well as the construction technique of stone blocks laid one upon another. At the same time, the incessant repetition of stripes highlights the interior as a visual surface, and brings into one's consciousness an experience of the space as a shimmering field of optical sensation, perspectival tricks and immaterial effects – effects that are quite distinct from the physical qualities of the masonry wall. Of course, any striped pattern can be thought of in such dualistic terms: both as a *physical* organisation of matter into banded chromatic oppositions, and as an *optical* structure independent of a physical support. While this paper is not about Siena's remarkable cathedral, its dramatic interior opens up a broader discussion on the articulation of architecture using the material and immaterial effects of stripes.

The spectacular display of interlinear colour at Siena Cathedral is but one particularly intense example from a long history of striped masonry architecture. Many others exist.[1] The earliest known are Roman constructions dating from the first century BC. These structures employed a technique known as *opus vittatum* in which walls were built with a facing of banded brick and stone, ostensibly for constructional and decorative purposes. It was from this ancient practice that stripes emerged, forming what is arguably one of the oldest and most enduring methods of ornament in occidental architecture. Remarkably, stripes continue to be used today, although they are most commonly associated with only a small selection of historical works: the medieval churches of northern and central Italy (such as Siena); the polychrome brickwork of the High Victorian Movement; Loos' unbuilt Josephine Baker House; and the work of certain Post-Modernists including, most notably, Swiss architect Mario Botta.

Despite their frequent occurrence and visual impact, the presence and significance of stripes have been largely overlooked by architectural historians and theorists. And, while there are some reasonably consistent formal typologies that may be identified in the tradition of horizontally striped buildings, it is difficult to attribute any stable meaning or intent to them over the past 2000 years. This paper takes a synchronic approach to the striped building canon, and focuses on Mario Botta's Watari-um Museum of Contemporary Art in Tokyo (1985-1990) as its main object of discussion. While the building has been widely published, its stripes typically attract only passing mention.[2] Elsewhere, I have begun to address this gap in the discourse, arguing that Botta's use of stripes reveals certain Post-Modern

1 Key episodes of this history have been discussed in Paine 2011.

2 For example: Pizzi 1998; Sakellaridou 2001; Watari 1990.

tendencies and a latent historicism in his work which contradicts the architect's ostensibly modernist agenda (Paine 2012). For the present discussion, the Watarium's façade highlights a series of significant issues regarding the effects of stripes applied to architecture. But there is another more fundamental problem for this paper. While we can observe their spatio-visual effects, we do not have the conceptual tools or critical discourse with which to examine striped building surfaces in a meaningful way. Here, some of the early writings of Rosalind Krauss will be used to begin to unpack the perceptual effects of striped architecture, beyond a merely intuitive response to their spatio-visual phenomena.

The ambitions of this paper are three-fold. First, to examine the perceptual effects produced by the interaction of stripes and architectural form; second, to consider their perceptual effects in their interaction with architecture and space; finally and perhaps most importantly, to draw upon visual art theory to establish a conceptual groundwork and discursive vocabulary with which to describe the formal, material and visual effects of striped buildings. Hence, by bringing together Botta's Watari-um and Krauss' texts, the paper attempts to redress the use of stripes in architecture, and provide the means through which we may examine their effects on form, space and the viewer. It also enables a discussion on the significance of these striped effects within a broader contemporary discourse on the architectural surface. We must begin, however, by establishing a more general understanding of the visual function of stripes.

Fig. 1 Siena Cathedral (thirteenth century). [Interior. Photo: Author, 2012]

The visual function of stripes

Fundamentally, stripes are conspicuous. They draw attention to themselves, and lead the viewer's eyes across a given surface. This salience brings with it a capacity to affect the perception of both form and space, enabling stripes to reveal, to highlight and to amplify those things to which they attract our eye. At the same time, this can also be an act of concealment, as stripes obscure that from which our attention is taken.[3] Such illusory properties are also popularly understood. For example, the patterning of a zebra, or the "dazzle painting" on some World War I battleships, demonstrate the camouflaging, or confusion-producing, effect of stripes.

Similarly, illusions such as the Helmholtz Square are well known, and explain how horizontal and vertical stripes can cause an overestimation of a figure's height or width respectively. Figure 2 demonstrates the illusion: A appears taller than B, even though both conform to a square figure of identical size.

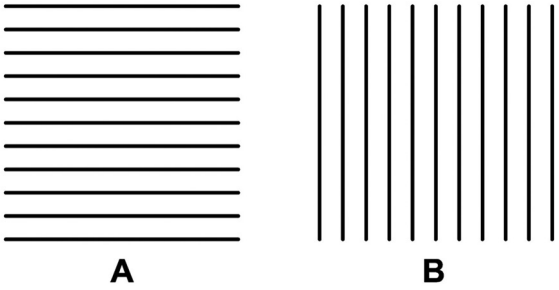

Fig. 2 Helmholtz Square Illusion. [Drawn by author, after Helmholtz (1925: 193)]

However, such effects can be undermined, even reversed, depending on how they are used. As John Vredenburgh van Pelt points out, the efficacy of the Helmholtz Square illusion, for example, depends on the arrangement of stripes in relation to one's reading of the overall figure that bounds the pattern (1902: 140). This might explain why, contrary to the Helmholtz principle, vertical rather than horizontal stripes are commonly used to make a small room appear taller. Figure 3 demonstrates van Pelt's idea, and shows how stripes that are indifferent to their support's boundaries (here shown dashed) can form a new and independent figure with its own horizontal or vertical bias. Indeed, this consonance or dissonance between the support and the striped figure appears to lie at the heart of the clarity or confusion-inducing effects of stripes.

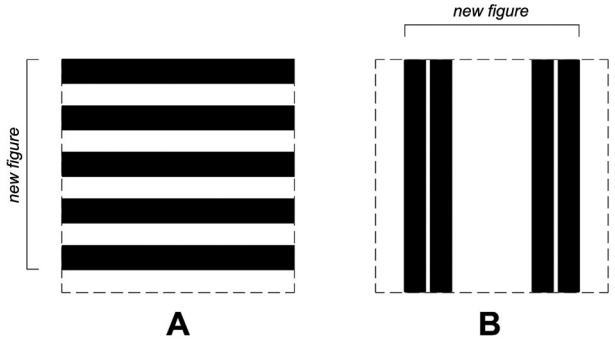

Fig. 3 Striped Square Figures. [Drawn by author, adapted from van Pelt (1902: 139)]

Most of these effects, however, deal only with stripes on isolated, two-dimensional surfaces, and seem to demonstrate the same thing: the inherent capacity of stripes to demand our attention or deceive our eyes. On three-dimensional surfaces, the effects of stripes become more uncertain, demonstrated by the continuing popular

3 Michel Pastoureau comes to similar conclusions in his history of striped textiles (2003: 91).

conjecture on the 'slimming' effect of striped clothing. Applied to architecture, stripes can interact with two-dimensional surfaces and three-dimensional forms in even more complex ways, and are perceived dynamically by a moving observer. It is in this context that the paper will now focus on the production of frontality and rotation. These are two significant spatial conditions that are brought to the fore by striped building surfaces. They are also two important concepts that help us to understand the visual behaviour of stripes, and to describe their material and immaterial effects on the perception of architecture.

Botta's Watari-um and the assertion of frontality and rotation

Ostensibly, stripes can enhance the expression of frontality in a given building simply by asserting the planarity of the façade. This is evident in the Watari-um – Botta's first museum project – where the stripes provide a visual register of the flatness of the building surface (Fig. 4). Located on a tiny triangular site of just 157m², the Watari-um's five above-ground storeys face a busy street in Tokyo's Shibuya district with a flat pre-cast concrete façade, striped with inlaid bands of black granite. While Botta has repeatedly used stripes to secure the frontal primacy of his projects, the combination of pale concrete and dark stone on the Watari-um marks it as a particularly bold example. Indeed, the façade appears imposing, monumental, and much taller than its actual number of floors. Harald Szeemann describes the building's surprising grandeur as a "magic act" that has transformed its small urban site with the building exhibiting an almost sacred presence (1990: 37-8).

Fig. 4 Mario Botta (1985-1990). Watari-um Museum of Contemporary Art, Tokyo [Street view. Photo: Author, 2010]

This paper contends that the visual impact of the Watari-um emerges as a direct result of its stripes, which enhance the severely frontal composition through their consonance with the figure of the façade, and form an almost perfect reproduction of the Helmholtz Square. Indeed, such an emphatic declaration of the façade seems to have been Botta's intention. Beginning in October 1985, he spent some five years and 20 iterations to achieve his final design (Pizzi 1998: 3) – the stripes appearing as early as the second scheme (Watari 1990). Writing to his client, Ms Shizuko Watari, upon the completion of the museum, Botta notes that:

> from the first drawings on I followed a strong and precise sign that had to resist the confusion and the contradiction of languages, styles and forms present in Tokyo … the main front is axial and stretched for its maximum frontal extension (as if it were the search of a maximum wing span for a bird). (Botta 1990: 8-9)

At the Watari-um, the use of frontality and stripes appears to be an assertion of strength and an exaggeration of scale, deployed to simultaneously confront and resist the building's context: the façade faces the street head-on, and provides a mask to the internal workings and organisation of the gallery. It even conceals the reading of individual floors, further complicating the perception of the building's scale. However, Botta's gallery is also of interest because of its three-dimensional rotation. This is discernible on the gently curved fire stair located to one side of the main façade, where thinner bands of black granite form an index of the contoured building surface, and differentiate the stair as an independent compositional element. Here the stripes exaggerate a sense of phenomenal rotation and movement through their emphasis on curvature, obliqueness and spatial depth. This rotational condition is distinctly less aggressive than the frontality of the façade: it is subdued by the reduced scale of the stripes, but also by their inherent denial of any possible frontal view. What is important in the Watari-um's use of stripes is that they clearly demonstrate the way in which banded ornament can draw attention to both the two- and three-dimensional conditions of the architectural form. Yet this is not simply a matter of the flat as opposed to the round. The concept and experience of frontality and rotation each imply much more complex spatio-visual conditions that require closer examination.

Frontality and rotation: concept and experience

The oppositional pairing of the terms "frontality" and "rotation" appears to be have been first used by art theorist and critic, Rosalind Krauss, in her essay "Leger, Le Corbusier, and Purism" from 1972, although she tackled the same issues in the 1968 essay "On Frontality", where she contrasts the notion of frontality with the concept of the oblique. While neither text is about stripes, she illustrates the earlier text almost exclusively with images of striped paintings, including works by Kenneth Noland and Frank Stella composed variously of stripes, banded arcs and chevrons. While this engagement with stripes appears incidental, Krauss' writings remain central to this paper for their examination and theorisation of the spatial and phenomenological effects of frontality and rotation.

It should be noted that the concepts of frontality and rotation have also been paired by other key twentieth-century architectural writers and theorists. For example, Kenneth Frampton used the terms in his essay "Frontality and Rotation" from 1975, to describe the shared compositional techniques of the New York Five. In his later discussion of works by Michelangelo and Le Corbusier, Colin Rowe made use of the concepts in much the same way but replaced "rotation" with the

term “contrapposto” (1996). The point is that the attention given to these ideas by Frampton and Rowe, and their use by such important figures in architectural history, highlights the broader significance of frontality and rotation for the practice of architecture, despite being largely ignored in contemporary practice, and never before addressed in relation to stripes.

There are parallels that can also be drawn with other discourses on perception. These include Heinrich Wölfflin’s much earlier formal division of the “linear” and “painterly” – terms which parallel key aspects of Krauss' “frontality” and “rotation” respectively – in his *Principles of Art History* (1932). Indeed, we can borrow from Wölfflin’s text to help characterise some of the formal and spatial qualities of these two terms, as well as their fundamental distinction between the *concept* and the *experience* of the two- and three-dimensional conditions of form. To summarise, the idea of frontality (“linear”) emerges not simply as a two-dimensional condition, but implies a frontal two-dimensional representation of a three-dimensional form that, like an architectural elevation, enables a precise understanding of the object, is dimensionally accurate, and as we *know* it to be. By contrast, the concept of rotation (“painterly”) suggests a more contingent point of view that – more like a perspective drawing – provides a visual semblance to the object, which is less precise, less defined, but true to how we actually *see* it (Wölfflin 1932).

While Wölfflin maintains a strict separation between architecture conceived in a linear or painterly mode, it is interesting to note that Krauss, Frampton and Rowe each recognise the interplay of frontality and rotation within a single work of architecture. And, despite some differences, all three acknowledge the important, formative co-existence of frontality and rotation in the works of Le Corbusier. We will return to the significance of their juxtaposition in the case of the Watari-um, but for the moment, Krauss' writings, which link stripes to frontality and rotation, demand more detailed consideration.

Stripes, frontality and rotation

Of all the writers who have described the conditions of frontality and rotation, it is only Krauss who—specifically in her description of a few banded paintings of the 1960s – provides a connection to stripes. In the essay “On Frontality”, Krauss points out that the assertion of frontality is assisted by the use of certain types of symmetry. In particular she compares the early striped chevron paintings of Noland, which employed vertically symmetrical triangular forms, to his later works that used similarly striped forms but with a horizontal plane of symmetry. Regarding the earlier paintings, Krauss says that the balance of the left and right hand sides reinforces the latent frontality of the image, whereas the left-right imbalance of the later works undermines it. She writes:

> Now turned sideways, the chevrons act to pivot the canvas so that the physical distance between the viewer and the right and left points of the picture’s edge appears unequal. The uncertainty about the painting’s shape which this illusion provokes seems to be a function of the horizontal axis itself. (1968: 45-46)

In other words, the difference between the left and right hand sides of the painting means that we can never confirm that we are looking at the picture front-on, and the ambiguity of this view introduces a sense of movement, or rotation, towards and away from the viewer, destabilising the picture’s frontality. Admittedly, the

use of stripes in these pictures is not critical to the effects, but they do play a part in establishing and asserting the symmetry of the works. More importantly, the geometric regularity of the stripes enables us to see these symmetries more clearly; it draws attention to them, obliging the viewer to recognise the frontality of the early pictures, or its denial in the later ones.

Further observations on the nature of frontality and rotation are developed in Krauss' discussion of architecture. Regarding Le Corbusier's Villa Roche, Krauss describes the movement through the house as a careful combination of both prospect and promenade: concepts that she equates with frontality and rotation respectively. Krauss writes:

> Le Corbusier insists upon the rigid frontality of all objects experienced from a distance, and further, that frontality and distance combine to allow knowledge of the real only by inference. Against this he pits the separate kind of knowledge one can have of proximate space by means of rotation through it. So that, for Le Corbusier, the counterpoint between frontality and rotation equals the contrast between ideation and experience. (1972: 52)

For Krauss, this ideational nature of frontality in architecture is much like the pictorial space of a painting: it establishes an illusionistic depth that cannot be entered physically. Rotation, on the other hand, is connected with spatial experience, corporeal perception and movement. Likewise, in painting, Krauss identifies an opposition between the illusory spatial depth of a frontal view – whether the literal depiction of space or a phenomenal sense of depth in abstract works – with the material fact of a painting's literal surface. Whereas a frontal view provides access to a fictive space, the actual materiality of the painting as a thing-in-space is more readily recognised from an oblique perspective (see Krauss 1968: 42). Hence, to "see" into the spatial illusion of the picture, the viewer must defeat the perception of a painting as a three-dimensional object and, instead, identify with its frontality.

But striped building surfaces do not have an illusionistic depth in the sense Krauss describes. If we are to maintain the idea that stripes do indeed help to establish frontality, we must also question its correlation with distance and imagistic space. Thomas Puttfarken's more recent text on pictorial composition offers an alternative way to think through these issues (2000: 1-42). In particular, he critiques concepts of frontality that emerge (like Krauss') from an understanding of pictures as if they were a distant scene viewed through an open window. While such scenes may take on picture-like qualities, Puttfarken argues that the frontality of images on two-dimensional surfaces emerge from very different conditions. In short, he suggests that a picture's frontality is achieved not through the perception of distance, but rather, through a fixed relationship between the elements of the picture and the picture plane itself. Unlike a scene viewed through a window, this conception of surface-bound frontality is stable: it is neither lost nor changed as we move about in relation to the image (Puttfarken 2000: 20-30). Indeed, Puttfarken likens this correlation between an image and its surface to a "façade" (24). We might therefore conclude that while distance might offer a sense, or semblance, of frontality, it is not ultimately dependent upon distance as Krauss seems to suggest. This point is important to the current discussion because it reveals that the frontality of striped architectural surfaces might be similarly constructed through the correlation of stripes with the plane of the building façade.

Thus frontality can be achieved not only by highlighting the planarity of a surface, but also by establishing certain symmetries, obscuring the perception of materiality, and by establishing a consonance between stripes and the building surface. Returning to Botta's Watari-um as an example (Fig. 4), the eye is attracted to the stripes which, like Noland's chevron paintings, help to establish an ideal position in front of the façade where the viewer's plane of vision is parallel to the plane of the building. From this position, the distortions of perspective are minimised and the elevation is made symmetrical and precise. Moreover, the graphic quality of the stripes draws attention to the two-dimensional figure of the building, and distracts attention from the materiality of the surface – it is not immediately apparent that the black stripes of the façade are composed not only of inlaid panels of dark granite, but also incorporate the shadowed voids of deeply recessed windows (Fig. 5). Such details become insignificant, and the Watari-um's layers of concrete and black stone are transformed into a two-dimensional surficial construction.

Fig. 5 Mario Botta (1985-1990). Watarium Museum of Contemporary Art, Tokyo [Street view detail (left) and façade detail (right). Photos: Author, 2010]

Moreover, while frontality is not dependent on physical distance from the building surface, Krauss helps us to recognise that frontality still has a distancing "effect" at the Watari-um. It produces an ideational separation that excludes the viewer, and encourages the striped façade to be perceived at a remove. Indeed, Botta appears to be conscious of these effects of his stripes. In a recent interview with the author he confirmed that he uses stripes to stress "the monumentality of the elevation. In the case of the Watari-um in Tokyo, the dark stripes … enlarge the dimensions of a small building with respect to the surrounding fabric" (Botta 2012). In short, the Watari-um façade is intended to be an impressive sight, not an intimate experience.

The converse is true when stripes are used to amplify the rotational qualities of a given space. As it has already been argued, stripes can highlight the contour of a surface. But, stripes can also confuse the reading of the form. As Krauss suggests, this ambiguity draws us closer in, and encourages us to move around the object, and to recognise its materiality and physical mass. In the case of the Watari-um, the striped stair curves away from the observer, and literally leads visitors in to the building entrance. However, at Siena Cathedral, the stripes all but obliterate the architectural form. Its stripes even overwhelm the strong axial plan by demanding the viewer's constant attention on oblique and tangential views: the appearance of the interior shifts and changes with every movement of the observer (Fig. 6). The richness and complexity of these fleeting images encourages the viewer to keep

moving through the space to explore its optical possibilities. Here, the capacity of stripes to assert the rotational qualities of space is most clearly illustrated – they emphasise the visual and sensual experience of form, at the expense of the clarity of that form – in stark contrast to the Watari-um's overt assertion of frontality.

Fig. 6 Siena Cathedral (thirteenth century) [Interior detail. Photo: Author, 2012]

In this light, frontality and rotation are not simply another pair of visual effects of stripes that operate through clarifying *or* obscuring form, attracting *or* diverting attention. Rather, they clarify *and* obscure; reveal *and* conceal at the same time. They might be therefore thought of as "meta-effects", that emerge as the combined result of the range of visual phenomena produced by banded materials.

What Krauss' writings also make clear is that these meta-effects of frontality and rotation also have implications for the observer. As the Watari-um example has demonstrated, frontality implies the orientation of an object towards the viewer, and the positioning of the viewer to meet it. It also suggests that the viewer stands before the object in a fixed position, as one might stand in front of a picture. Furthermore, Krauss argues a frontal view is a contemplative stance that distances the viewing subject – it is ideational and pictorial. It also has a temporal dimension: a frontalised façade compels the viewer to pause, to stand still. In the case of rotation, and as the Watari-um's fire stair and Siena Cathedral both demonstrate, there is no ideal position in which to stand. Rather, the viewing subject is encouraged to move and explore an infinite number of possible views. The experience is phenomenal, haptic and dynamic. The use of stripes to reinforce the directionality of form, affirms that viewers must not only consider their capacity to manipulate perception of that form, but also that they exert a degree of control. The striped façade encourages and anticipates the viewer standing before, or moving about the building, according to its frontal or rotational directives, demonstrating the fundamentally interactive possibilities of striped materials.

This interactivity of frontality and rotation gains even greater potential when the conditions are deployed together. While the two may not be perceived simultaneously – Krauss says it is impossible to see, or to experience, both at the same time (1968: 42) – frontality and rotation can co-exist. This has already been observed in the work of Le Corbusier, and in the Watari-um. Used together, frontality and

rotation create a theatrical play, made up of spatial tensions, formal contradictions and different temporal rhythms. Importantly, this play can also choreograph movement, and articulate the journey through space with moments of pause, reflection and stillness. This is the essential lesson on frontality and rotation that Krauss identifies in Le Corbusier's work, arguing that: "what Le Corbusier demands of architectural composition is that it should acknowledge the mutual interdependence of the one on the other" (1972: 52).

Stripes, articulation and perceptual artifice

It is clear, however, that Krauss' interest in frontality and rotation is limited to the formal qualities of Le Corbusier's architecture, rather than the use of ornament – such as stripes – to amplify or reinforce their presence. In conclusion, I would therefore like to move beyond Krauss by speculating on the particular significance of stripes and their capacity to assert (or deny) materiality and directionality. In particular, I would argue that what emerges most strongly from the discussion of striped architecture is ultimately an idea about articulation. By this, I refer to the material and immaterial effects of stripes on architecture that articulate the appearance of form through perceptual interference, and that choreograph movement through space via the assertion and interplay of frontality and rotation.

I would contend that these complex spatial and perceptual effects of stripes constitute a unique kind of ornamental condition. This might be described as "perceptual artifice" – a term with which I am attempting to name the particular type of control that stripes exert over the perception and affective phenomena of architecture. This idea builds upon the two-dimensional illusory principles of stripes, such as the Helmholtz Square illusion, and extends these concepts to the three-dimensional space of architecture. It also exceeds the optical limits of these illusions: perceptual artifice combines an understanding of the visual function of stripes with Krauss' insights on frontality and rotation, to capture their effects on the phenomenal, dynamic and temporal experience of architectural space.

The term, and concept, of perceptual artifice therefore provides us with a new tool that unlocks the possibility of rhetoric concerning the nature of stripes, bridging the gap between existing fields of knowledge in visual art theory and architectural practice. It provides us with the conceptual groundwork upon which we may build a theoretical and practical understanding of the effects of stripes on architectural form, and describe their manifestation of the material and immaterial conditions of architecture between haptic and visual sensation. Perceptual artifice also exposes stripes as an a-semantic device for articulating architecture – a kind of lens through which we perceive, and therefore interact with, space. This is important for the understanding and discussion of the effects of striped buildings, such as the Watari-um, but it is also relevant to much contemporary architecture. In particular, it adds to the lexicon of ideas and concepts of recent decades that are used to describe the material and immaterial conditions of the architectural surface. Indeed, the surface has become a locus of design experimentation and architectural intent for many architects working today.

The idea of perceptual artifice also implies a certain compositional potential for the use of stripes in architecture, through their ability to articulate, punctuate and provide structure to the viewer's experience, movement and sensation. This too has implications beyond the use of stripes, particularly in the context of a resurgent interest in ornament and the typically decorative application of phenomena-producing materials. It also challenges the all-over patterning exhibited

by much architecture today, which appears to shun compositional control in favour of an unrestrained deployment of sensual materiality and elaborate surface treatments. Moreover, perceptual artifice obliges us to re-examine the use of compositional tools to effect interaction with users. Presently, ideas about interactivity in architecture tend to focus narrowly on technological means, or are substituted for the visual gratification and material pleasure provided by the building surface. Rarely does the architecture of today combine such rich visual and material experiences with the particular spatial effects of frontality, and its unique pleasures of control, articulation and exaggeration.

Perceptual artifice therefore returns us to these all but forgotten ideas for a performative architecture; ideas previously employed so effectively by the likes of Le Corbusier. It is also a timely and important reminder of the inherent and affective power of architecture that lies in the (im)material depths of its surface.

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Invited papers

The ruins of the immaterial

Jonathan Hill

Building books

The architect as we understand the term today was established in Italy in around 1450, in France a century later and in Britain in the early 1600s. The command of drawing – not building – unlocked the status of the architect. The term "design" derives from the Italian *disegno*, which associates the drawing of a line with the drawing forth of an idea. *Disegno* allowed the three visual arts – architecture, painting and sculpture – to be recognised as liberal arts concerned with individual, intellectual labour, a status they had rarely been accorded previously. In the new division of labour, architects acquired complementary means to practice architecture that were as important as building, namely drawing and writing, creating an interdependent and multi-directional web of influences that together stimulated architects' creative development. To affirm their newly acquired status, architects began increasingly to theorise architecture both for themselves and for their patrons, ensuring that the authored book became more valuable to architects than to painters and sculptors, whose status was more secure and means to acquire commissions less demanding. In contrast to the architectural drawing, which is seen in relation to other drawings and a building, the painting is unique and need not refer to an external object, thus appearing further removed from the material world and closer to that of ideas.

Written in around 1450 and published in 1485, Leon Battista Alberti's *De re aedificatoria* (On the Art of Building in Ten Books) was the first thorough investigation of the Renaissance architect as artist and intellectual. Francesco Colonna's *Hypteromachia Poliphili* (1499), was the second architectural book by a living writer published in the Renaissance and the first to be printed with illustrations, establishing the multimedia interdependence of text and image that has been essential to architectural books ever since. One model for the architectural book, *Hypnerotomachia Poliphili* is a fictional narrative illustrated with pictorial representations in which love is lost and among monuments and ruins in a sylvan landscape. A second model is the analytical manifesto justified through principles and examples and illustrated with orthogonal drawings, such as Andrea Palladio's *I quattro libri dell' architettura* (The Four Books of Architecture, 1570). The relationship between history and design was central to both authors, although they did not aim to be rigorous and objective in the manner of later historians. Historical references appear in both books but for different purposes. In one they enrich a specific story, in the other they legitimise generic architectural solutions. A further literary model, the manual conveys practical knowledge and is illustrated with diagrams and calculations. But these models are not hermetic and many architectural books refer to more than one, as is the case in Palladio's attention to practical matters in *The Four Books*.

Things of a natural kind

Classical antiquity associated the material with temporal decay and the immaterial with timeless, geometric order. Consequently, in the Renaissance, *disegno* emphasised the immaterial idea of architecture not the material fabric of building, and the architectural imagination was restricted to the universal, unchanging geometries of ideal forms. But in built architecture, the relations between the immaterial and the material were sometimes considered with great subtlety. Modesty scaled farms in most cases, Palladio's villas recall the relaxed rural life

evoked in classical antiquity by Virgil and Pliny the Younger, while their elegant but inexact proportions refer to the immaterial and its uncertain presence in the physical world. Emphasising this distinction, the buildings drawn in *The Four Books of Architecture* are each an ideal, not those actually built. Subsequently, the baroque drew further attention to subjective interpretation; for example, baroque drama exploited the dialectical potential of allegory, in which meanings are not fixed but endlessly changing and open to appropriation and revision. In a more significant departure, John Locke dismissed the search for ultimate truth in *An Essay Concerning Human Understanding* (1690), emphasising that ideas are subject to experience and provisional rather than universal. Accepting that there are limits to what we can know, Locke argued that conclusions must be in proportion to the evidence: "Our business here is not to know all things, but those which concern our conduct."[1] The Enlightenment – the natural light of reason – assumed that nature and humanity are subject to the same divine laws and available for rational investigation. The principal British contribution to Enlightenment theory was empiricism, which promoted reason but made it specific rather than generic. Offering an evocative metaphor, Locke stated that the mind begins as a "white Paper", an empty cabinet, which experience furnishes with understanding, and he distinguished between the simple ideas of sensations, over which the mind has no control, and complex ideas, which the mind creates by selecting and combining simple ideas.[2] But, acknowledging the observer's role in shaping experience, later empiricists came to recognise that empirical investigation without prior concepts is impossible, concluding that personality and morality develop through an evolving dialogue between the environment, senses and mind.

Emphasising moderation and restraint, Locke required a degree of detachment from the natural world, while Anthony Ashley Cooper, third Earl of Shaftesbury, influenced a further reassessment. Previously, uncultivated nature was considered to be brutish and deformed because the immaterial soul, "as a visitor in matter", could not "be truly at home in nature", remarks Ernest Tuveson.[3] Recuperation in nature found enhanced expression in the early eighteenth century, when nature and moral virtue were linked for the first time. Shaftesbury confirmed Locke's appreciation of liberty and reason but tempered his empiricism and egalitarianism. Unlike his tutor, the pupil acknowledged an ideal order, reasserting the humanist tradition of Renaissance Italy and its respect for the "immutable truths" of classical antiquity: "Twas Mr. Locke that struck at all Fundamentals, threw all Order and Virtue out of the World".[4] However, departing from Plato, Shaftesbury conceived nature not as debased but as a means to contemplate the divine.[5] Sensitivity to one's environment became as necessary as sensitivity to others. In the second volume of *Characteristicks of Men, Manner, Opinions, Times* (1711), Shaftesbury praises nature and weather: "enliven'd by the Sun, and temper'd by the fresh AIR of fanning *Breezes*! ... I shall no longer resist the Passion growing in me for Things of a *natural* kind."[6]

Cultivating landscapes

Derived from the Latin *nascere*, meaning "to be born", the term "nature" has numerous meanings in which the principal distinction is between, first, a concept through which humans define themselves in relation to what they think they are not, and, second, the phenomena and processes of which humans are a part, as in, for example, Charles Darwin's theory of evolution in *The Origin of Species* (1859).[7]

The term "landscape" initially referred to land managed and cultivated by an agrarian community. Expanding its meaning, by the sixteenth century it also

1 Locke 1975: bk. 1, ch. 1, 46.

2 Locke 1975: bk. 2, ch. 1, 104.

3 Tuveson 1960: 11.

4 Shaftesbury 1900: 403.

5 Plato 1929: 121.

6 Shaftesbury 1999: vol. 2, 94-101.

7 Darwin 1996: 109.

referred to a picture of nature and in the eighteenth century it was applied to a prospect of actual nature, which in 1770 Thomas Whately so vehemently stated was "as superior" to a mere "painting, as a reality to a representation".[8] In each of these meanings, "landscape" acknowledges a human intervention, indicating why the prefix "natural" is applied to a landscape that is seemingly unaffected by humanity even though this has been impossible for centuries. Such a landscape is culturally defined, reflecting what we have learned to see as natural, notably so in Britain, the first industrialised nation.

The earliest meaning of the term "culture" also referred to farmland, which endured from the Middle Ages to the late eighteenth century. A further meaning originated in the early sixteenth century and emphasised that the successful and prosperous cultivation of land enabled a person to become cultivated and cultured. Both meanings were in use in the eighteenth century, but only the second – human culture – continued into the nineteenth century. Jonathan Bate describes the picturesque landscape as "a symptom of the growing division between" the two "senses of the word 'culture'".[9] But as it was conceived holistically in social, aesthetic and ecological terms, the eighteenth-century estate can, alternatively, be understood as a key moment when nature and culture were interdependent in meanings of the term "landscape".

Landscapes of architecture

In Britain, the architect associated with *disegno* was in its infancy when another appeared alongside it, focusing first on gardens not buildings because they were more clearly subject to the changing natural world. The new reverence for subjectivity and nature, and the association of one with the other, found expression in the picturesque, which is a deceptive term because it emphasises one aspect of the eighteenth-century garden to the detriment of its other qualities, such as the importance of the senses and the seasons to design, experience, understanding and the imagination. An emphasis on pictorial composition may profess a love of nature that forces nature to imitate art, making landscapes appear natural and implying that certain social relations and environmental transformations are natural too. But to dismiss the pictorial aspect of landscape as merely a prospect on property, as some critics have done, is to deny the complex painting history that informed the picturesque and also to ignore the subtlety of garden designs and drawings.

In a letter to Pope Leo X, c. 1519, Raphael associated the picture with the painter and the plan with the architect.[10] But the value given to experience in the eighteenth century made this distinction less convincing. William Kent continued to depict his building designs in orthogonal drawings, but his garden designs – and often his garden buildings too – were presented pictorially. Employing multiple perspectives in a single image, and conceiving a network of inter-related scenes and alternative routes, Kent designed in response to specific natural settings and incorporated varied themes in a single garden, such as history, politics, love and death.

Accommodating multiple journeys, abundant allegories and imported trees, the picturesque was associated with the choices and opportunities available to the fortunate and prosperous in eighteenth-century English society, and came to personify the liberty and liberalism they professed. Focused on the fleeting pleasures of the present, an increasingly secular age emphasised the seasons of a life as well as the seasons of a year, and encouraged a new type of design and a new way of designing, which valued the ideas and emotions evoked through experience. The picturesque adopted the ruin as its emblem, a hybrid of architecture

8 Whately 1771: 1.

9 Bate 2000: 3-5, 11-12.

10 Raphael and Baldassare Castiglione, in Hart & Hicks 2006: 188.

and landscape, nature and culture, which was understood to represent growth as well as decay, potential as well as loss, the future as well as the past. Rather than a finite object, the ruin acknowledged the effects of time and place, emphasising a symbiotic relationship with its ever-changing immediate and wider contexts that recognised the creative influence of natural as well cultural forces. Rather than timeless and distinct from the material, the eighteenth century increasingly conceived the immaterial as temporal and subject to experience, not only in the actual absence of matter but also in the perceived absence of matter seen through mists and storms, establishing a dialogue between the immaterial and material that associated self-understanding with the experience of objects subject to weathering and decay. Diminishing an object physically, ruination was understood to expand its metaphorical potential: "for imperfection and obscurity are their properties; and to carry the imagination to something greater than is seen, their effect", concluded Whately.[11] Britain was so associated with its landscape that the ruin offered a means to negotiate between nature and culture. Evoking life and death in a single object, the ruin of a building was linked to the ruin of person or a place, as well as their potential for renewal. For an individual and for an island nation, self-understanding was synonymous with the experience of landscape in all its forms, the air and the sea as well as the land.

Landscapes change faster than buildings and are more clearly subject to seasonal cycles of growth and decay. An architecture that is conceived as analogous to an ever-changing landscape is more temporally aware than other buildings and will require constant re-evaluation, encouraging particularly questioning and creative relations between objects, spaces and users at varied times, scales and dimensions.

The city and the sea

Architecture's relations with nature and climate have influenced architects since at least Vitruvius in the first century BC.[12] But the seventeenth and eighteenth centuries instigated a more intense and profound dialogue with nature, establishing an architectural environmentalism that has significantly influenced subsequent centuries. At first this new environmentalism was specific to the garden, but it led to a much wider engagement with the natural world. At Holkham in early eighteenth-century Norfolk, Thomas Coke chose a turbulent coastal setting and commissioned Kent to design a landscape before a house, while the threatening sea was moving inland. The estate's dual orientation established a dialogue between culture – London and the Grand Tour to the south – and the expansive sea to the north. Rather than distinct and sequential, the Enlightenment and romanticism were evolving and interdependent philosophical traditions present throughout the eighteenth century and evident in the landscape garden. One cultivated nature but remained detached, staring south towards the placid Mediterranean and its piercing light. The other did not discard reason but eulogised nature as the means of spiritual self-revelation, travelling north into the stormy sea and overcast sky.

Like the picturesque, the term "romanticism" has often been applied pejoratively, suggesting disengagement and retreat from contemporary concerns. Claiming to heal the rupture of culture from nature, the romantic imagination may instead misrepresent nature, further its commodification, and prevent critical engagement with the natural world. However, in early nineteenth-century London the collaborations and conversations of painters, poets, scientists and architects indicated their mutual respect and overlapping concerns. The search for understanding led the romantic mind to cultivate a dialogue between the rational and irrational. Valuing

11 Whately 1771: 131; refer to Simmel 1965: p. 256.

12 Vitruvius 1960: 38-39.

intellect as well as emotion, invention as well as history, time as well as place, romanticism was promoted in science as well as art, which were not then opposed in the way they have sometimes subsequently been. Acknowledging the union of nature and culture, romanticism recognised a responsibility to both. The romantic scientist was not external to nature, and neither were the romantic painter and poet.

As romanticism increased the authority of the artist, who more often selected the subject and the site of an artwork, J. M. W. Turner's rising reputation was influential in raising the status of landscape paintings. Depicting a myriad of scenes, whether magnificent or mundane, urban or rural, maritime or industrial, Turner expanded the meanings of the term "landscape". In a nation such as Britain, with a nationally and globally interconnected infrastructure, a clear division between country and city was increasingly untenable and no longer equivalent to nature and culture respectively.

Whether at sea or in the city, Turner painted what he experienced. In London, his deliberately dilapidated studio enabled him to paint *in situ*. Turner's subject literally entered his work in pigments and pollution. The dirt and rain that landed on unfinished canvases, and Turner incorporated into his paintings, combined with composites of natural and industrial pigments, which he used before any contemporary.[13] His subject, site and painting practice were perfectly aligned. Rather than a retreat to nature, Turner's romanticism acknowledged the complexity of his time, its climate and weather. Immersed in the hybridised atmospheres and energies that defined early-nineteenth century London, which nature and industry had together created, he offered an early image of anthropogenic climate change.

Factual histories

Empiricism influenced writing conventions as well as landscape and building design, and informed the relations between them too. Describing actual events and others of his own invention, Giorgio Vasari's *Le vite de' piu eccellenti pittori, scultori e architettori* (The Lives of the Most Eminent Painters, Sculptors and Architects, 1550), was the first significant history of art and architecture, initiating a new discipline. In the sixteenth century, history's purpose was to offer useful lessons; accuracy was not necessary. In subsequent centuries, empiricism gave greater emphasis to the distinction between fact and fiction, which came to transform historical analysis. Rather than Vasari's focus on individual achievements, historians began to employ a methodical, comparative method to characterise changing cultural, social, political and economic processes in which the deeds of specific protagonists were contextualised. Influenced by the empiricist philosopher Francis Bacon, Giambattista Vico's *Scienza nuova* (1725), was the first modern history. By the nineteenth century, the art and architectural historian was established as a distinct practitioner and history was naively assumed to a science capable of objective statements, which led to an emphasis on archival research. Science is supported in its claim to objectivity by the presence of its objects of study before the scientist. No archive, however complete, can return the historian to the past and no history is more than an interpretation of the past in the present. Our understanding of the past, which is progressively more distant, is inevitably partial. Laying bare the processes of construction and decay, a history is both a ruin of the past and a speculative reconstruction in the present.[14] Any history expresses a particular ideology, as does any scientific statement. Selectively focusing on certain information while ignoring others, they cannot be neutral. Whether implicit or explicit, a critique of the present and prospect of the future are evident in both historical and scientific statements.

13 Hackney 1995: 53-54; Townsend 1993: 70; Townsend 1995: p. 5.

14 Benjamin 1977: p 177-178.

Factual fictions

In valuing direct experience, precise description, and a sceptical approach to "facts", which needed to be repeatedly questioned, the empirical method also created a fruitful climate in which the everyday realism of a new literary genre – the novel – could prosper as "factual fictions".[15] In contrast to the earlier romance, which incorporated classical mythologies, the novel concentrated on contemporary society and the individualism it professed. The focused investigation and precise description that empiricism demanded was applied to the novel, which emphasised specific times, peoples and places and sought justification through reference to a combination of reasoned explanation and intuitive experience. Recognising a difference in style as well as content, William Congreve remarked that in contrast to "the lofty Language, miraculous Contingencies and impossible Performances" of the romance, novels are "of a more familiar nature' and 'delight us with Accidents and odd Events ... which not being so distant from our Belief bring also the pleasure nearer us".[16] The uncertainties and dilemmas of identity, as in Locke's assertion that "*Socrates* waking and sleeping is not the same Person", were ripe for narrative account.[17] Countering Locke's call for moderation, recognition that we make our own reality was exploited for its creative potential. Notably, Daniel Defoe's *Robinson Crusoe* (1719), which is often described as the first English novel, is a fictional autobiography, as is his later novel, *Moll Flanders* (1722).

The early novels – fictional autobiographies – developed in parallel with early diaries – autobiographical fictions. The novel's attention to contemporary individualism was also seen in diary writing, which Locke recommended as a means of personal development. People have written about themselves for millennia but the formation of modern identity is associated with a type of writing that Michel Foucault describes as a "technology of the self".[18] As Paul de Man remarks: "We assume that life *produces* the autobiography as an act produces its consequences, but can we not suggest, with equal justice, that the autobiographical project may itself produce and determine the life."[19]

The life and opinions of John Soane, gentleman

Emphasising a fascination for landscape and its relationship to dwelling that was to become a principal theme of English literature, Robinson Crusoe even had "my Country-House, and my Sea-Coast-House" on his shipwreck island.[20] The early English novel's relationship to the picturesque garden has not been acknowledged before, even though they were each a response to empiricism and the secular individualism of eighteenth-century society, and influenced each other. Self-reflection stimulated questions of identity, fractured narratives and digressions in the garden as well as the novel, although the landscape designer emphasised classical mythologies alongside contemporary events. The picturesque garden was both a novel and a romance, conceived according to *ut pictura poesis* – as with a picture, so also with a poem – a concept that originated in classical antiquity and acquired further resonance due to Locke's concern for the association of ideas as a stimulus to the mind.[21] Equally, the picturesque garden was equivalent to a history, formulating an interpretation of the past in the present through classical reconstructions, antique sculptures and Mediterranean trees.

The influence of the picturesque garden and novel, as well as Enlightenment architecture, can be seen in the house, museum and office that John Soane created at 12-14 Lincoln's Inn Fields, London. He described Kent as "the father of modern gardening" and an architect of "genius", and was equally indebted to Laurence Sterne's meandering fictional autobiography *The Life and Opinions of Tristram*

15 Davis 1996: 213.

16 Congreve 1692: . 5-6.

17 Locke 1975: bk. 2, ch. 27, 342.

18 Foucault 1984: 369.

19 De Man 1984: 69.

20 Defoe 2007: 87.

21 The chapter "Of the Association of Ideas" appears in the fourth edition, in 1700, although it was written somewhat earlier. Locke 1975: bk. 2, ch. 1, 105; bk. 2, ch. 33, 394-401.

Shandy, Gentleman (1759-1767) and Nicolas Le Camus de Mézières' claim in 1780 that as architecture follows nature's principles, a house and a garden can be designed in a similar manner and are each equivalent to poetry. Soane conceived 12-14 Lincoln's Inn Fields as a fictional autobiography and picturesque architectural garden, and wrote a novelistic history of his home as a future ruin.[22]

Like a garden, a novel may be emblematic, expressive or a combination of the two. Soane valued architecture that can "please generally and at first sight", while to sustain attention he emphasised that a "building often pleases from its variety and movement whereby the succession of interest is kept up".[23] 12-14 Lincoln's Inn Fields is so excessively emblematic that it is expressive. In conceiving a building as a poem in which emotional and discursive impact is more important than any specific meaning, architects influenced the development of romantic literature.[24]

Hypnerotomachia Poliphili was a further influence: Soane, like Kent, owned several copies.[25] A building site for over 40 years, Soane conceived his home as a ruin and ruined as much as he built. As he remained on site while the three adjacent buildings were constructed, demolished and rebuilt, 12-14 Lincoln's Inn Fields was then a living ruin unlike the preserved ruin it became after his death in 1837.

Soane enrolled to study architecture at the Royal Academy of Arts in 1771, just three years after its foundation, and became the Professor of Architecture in 1806. The classification of the fine arts in opposition to utility led painters and sculptors to discard the term "design" once it was associated with collective authorship, industrial production and the applied arts.[26] Among the fine arts, which include the three original visual arts, only in architecture is the term design regularly referred to today. Older and newer meanings of design proliferate in the discourse of architects, often in combination with each other. As in Soane's case, influential architects tend to write and draw a lot as well as build, authoring an interdependent network of drawings, books and buildings that inform each other. Equivalent to a visual and spatial diary, the process of design – from one drawing to the next iteration and from one project to another – is itself a fictional autobiography, a "technology of the self", even when a number of collaborators are involved, formulating a design ethos or "creative myth" for an individual or an office.

Romantic modernism

For the next hundred years, the picturesque was largely ignored or suppressed within the gothic revival. But in the mid-twentieth century, British modernism was associated with the picturesque and a burgeoning romanticism, encouraging architects to counter an earlier, didactic and universal modernism by embracing history, landscape and environmentalism. Once again, the ruin was adopted as a symbol of hope as well as loss.[27] Associating the picturesque with liberalism and empiricism, Brenda Colvin emphasised that just 23 out of 60 "native" trees originated in Britain, while Nikolaus Pevsner offered a human equivalent to her sylvan allegory: "England has indeed profited just as much from the un-Englishness of the immigrants as they have profited from the Englishing they underwent".[28]

While eighteenth-century England advocated liberalism, only a small proportion of the population were allowed a university education, the right to vote, and access to a picturesque estate. In contrast, the post-war welfare state aimed to open these rights and pleasures to all classes and the whole population. Commissioned in 1962 to build the new University of East Anglia in late eighteenth-century parkland at Earlham, Norfolk, Denys Lasdun aimed to design "buildings which

22 Le Camus de Mézières 1992: 74; Soane, in Watkin 1996: 491, 608, 642, 647 and 653; Soane 1999: 61-75.

23 Soane, in Watkin 1996: 194.

24 Saisselin 1975: 247-248.

25 Gordon 1999: 71-72; Watkin 1996: 246.

26 The Abbé Batteux provided the first detailed categorisation of the fine arts—notably poetry, music, painting, sculpture and architecture—in *Les beaux arts reduits à un même principe*, 1746.

27 Colvin 1945: 26-30.

28 Colvin 1972, first edition in 1947; Colvin, 1970: 220, first edition in 1947; Pevsner 1956: 185.

responded almost ecologically to unique and specific situations" and persuaded UEA to appoint Colvin as its landscape architect.[29] She was indebted to John Evelyn's poetic and pragmatic *Fumifugium: or The Inconvenience of the Aer and Smoak of London Dissipated* (1661), which recognised mitigation and adaptation as responses to anthropogenic climate change three centuries before these principles were widely accepted, and his subsequent book *Sylva, or A Discourse of Forest-Trees* (1664), which promoted a more sensitive and sustainable modification of nature than before.[30] Colvin maintained and extended the site's rich variety of natural habitats, and conceived the integration of landscape and architecture in terms of the interdependence of nature and culture, and natural and human biology, associating physical processes with metaphysical dimensions.

Lasdun walked UEA's site "in all seasons, in mist, snow, wind and sun" and travelled Norfolk extensively.[31] In a key design decision with picturesque connotations, he decided that the various architectural elements "were to be disposed on this site with loving care for the configuration and contours of the landscape, its prospect and aspect".[32] Holkham was expressive as well as emblematic but later picturesque landscapes, such as Earlham, emphasised sweeping topography rather than iconographic monuments because the expressive garden was then assumed to place fewer restrictions on the imagination.[33] Expressive rather than emblematic, Lasdun's design exactly inverts the sequence at Holkham, beginning with a tree-lined linear avenue that runs due south until it reaches a 'nodal point' that reveals 'panoramic views' across the university and towards the river.[34] As at Holkham, the southern orientation refers to Greece and Rome, which at UEA also acknowledges their influence on Lasdun's heroes, Nicholas Hawksmoor, Le Corbusier and John Soane. The north is referred to in terms of climate rather than direction: "As bits get chipped off and bits grow around it, I think it will become part of landscape... On a wet day it may look drab and forbidding, and they might scuttle away from it. On a sunny day it's magical, but then buildings are like that, they should be."[35]

Exemplifying the emotive power and allegorical potential of architecture and landscape, and the possibility of growth as well as decay, a monumental, living ruin looks to the future as well as the past, generating an appropriate image for a highly regarded and innovative university that is today best known for creative writing and climate change research. But algae and moss, which soon covered the buildings, also turned a past image of the future – a new university – into one of slow decay that was sadly appropriate to the demise of free higher education, one of the emblems of the welfare state.

In the symbiosis of geography and history in an island nation, Lasdun recognised that British architecture is both interdependent with landscape and a form of landscape architecture, an enduring and evolving tradition from the picturesque and romanticism to modernism in which the genius of the place has been made as much as found, the fusion of new ideas, forms and spaces with those already in place, which were themselves sometimes the result of earlier migrations.[36]

Architects of history

From the Renaissance to the early twentieth century the architect was a historian in the sense that an architectural treatise combined design and history, and a building was expected to manifest the character of the time and knowingly refer to earlier historical eras. Modernism ruptured this system in principle if not always in practice, but it returned with vigour in the mid-twentieth century.

29 Lasdun 1984: 135.

30 Colvin 1970: 34-35, 59, 61; Evelyn 1772: 3, 28, 34-37; Evelyn 1664: 112–120.

31 Alexander Redhouse and Peter McKinley, "UEA, Denys Lasdun and Partners", lecture, 15 February 1966, quoted in Sanderson 2002: 147.

32 Lasdun 1965: 273.

33 Whately 1771 153–55, 217–2.

34 Denys Lasdun, "UEA Development Plan, December 1962". Lasdun archive, RIBA Library Drawings and Archives Collections, V & A, London.

35 Lasdun, in "Interview with Denys Lasdun", revised draft, 13 June 1979, p. 11. Lasdun archive, RIBA Library Drawings and Archives Collections, V & A, London.

36 Gilbert Meason used the term in *On the Landscape Architecture of the Great Painters of Italy*, 1828, as did John Claudius Loudon in his edited collection of Repton's writings in 1840. Rather than the design of landscapes, Meason and Repton most likely referred to architecture in a landscape setting.

Architects have used history in different ways, whether to indicate their continuity with the past or departure from it. Even early modernists who denied the relevance of the past relied on histories to justify modernism's historical inevitability and systematic evolution. To some degree, mid-twentieth century architects merely reaffirmed an appreciation of history that was latent in works such as Le Corbusier's *Vers une architecture* (1923).[37] But the Second World War was a more scientific war than the First, and nuclear devastation undermined confidence in technological progress, which early modernism had emphasised as a means of social transformation. In the search for stability in the uncertain aftermath of 1945, modernism's previously dismissive reaction to social norms and cultural memories was itself anachronistic. The consequence was not just to acknowledge early modernism's classical heritage but also to place a concern for history at the heart of architecture once again, affirming the liberal humanist tradition that modernism had once seemed to repudiate, and undermining the unnecessary opposition between tradition and innovation that modernism had once seemed to pose.

Critical of international modernism, in 1954 Ernesto N. Rogers promoted appreciation of national and regional architectural cultures. To explain his conception of a building in dialogue with its physical and natural surroundings and contributing to an evolving historical continuity, he quoted from "Tradition and the Individual Talent" (1917), in which T. S. Eliot emphasised that the present alters our understanding of the past as much as the past influences the present.[38] Admired by Rogers and equally indebted to Eliot's essay, Lasdun noted the value that the poet placed on innovation as well as tradition: "The existing monuments form an ideal order among themselves, which is modified by the introduction of the new (the really new) work of art among them."[39] Confirming the prevalence of such ideas in postwar architecture, in 1969 Vincent Scully concluded that the architect will "always be dealing with historical problems – with the past and, a function of the past, with the future. So the architect should be regarded as a kind of physical historian … the architect builds visible history".[40] As a design is a reinterpretation of the past that is meaningful to the present, transforming both, each building or landscape is a new history. The architect is a historian twice over: as a writer and as a designer.

The creative myth

Histories and novels each display a concern for the past, present and future. They give meaning to the present and may personify an attitude and an era. The historian acknowledges that the past is not the same as the present, while the novelist inserts the reader in a place and time that feels very present even if it is not. Histories and novels both need to be convincing but in different ways. Although no history is completely objective, to have any validity it must appear truthful to the past. A novel may be believable but not true. But recognising the overlaps between two literary genres, Malcolm Bradbury – co-founder with Angus Wilson of UEA's pioneering creative writing programme – notably described his novel *The History Man* (1975), as "a total invention with delusory approximations to historical reality, just as is history itself".[41]

Associating designing with story-telling and history-writing, Lasdun remarked that each architect must devise his or her "own creative myth", which should be "sufficiently objective" and also have "an element of subjectivity; the myth must be partly an expression of the architect's personality and partly of his time, partly a distillation of permanent truths and partly of the ephemerae of the particular moment".[42] The "creative myth" may be a private inspiration or a public, collective

37 Le Corbusier 1927: 31.

38 Rogers 1953-1954: 2.

39 Eliot 1941: 26–27; filed in Lasdun archive, RIBA Library Drawings and Archives Collections, V & A, London.

40 Scully 1969: 257.

41 Bradbury 1975: unpaginated.

narrative that is disseminated widely, either to architects, or to users, or to society as a whole. Emphasising that "I don't mean myth in the sense that it is untrue", Lasdun concluded: "My own myth ... engages with history".[43]

As a design is equivalent to a history, we may expect the designer as well as the historian "to have a certain quality of *subjectivity*" that is "suited to the objectivity proper to history", as Paul Ricouer concludes.[44] But the designer does not usually construct a history with the rigour expected of a contemporary historian, and we expect the designer to display other qualities of subjectivity as well. Instead, the designer creates novel histories. Equally, a design is equivalent to a novel, convincing the user to suspend disbelief. Part-novelist, part-historian, the architect is the history man. We expect a history or a novel to be written in words, but they can also be cast in concrete or seeded in soil. An architectural book can be a history and a novel, and so can a building or a landscape.

Conceiving a design as both a history and a novel is not exclusive to the analogy of landscape to architecture but it is central to this tradition because of the simultaneous and interdependent emergence of art forms that are usually considered in isolation: the English novel, the analytical and comparative history, the picturesque landscape, and the associated design practice in which ideas are subject to experience and special emphasis is given to natural forces and the environment. Developed in the eighteenth century, this tradition found new emphasis in the mid-twentieth century and continues today, acknowledging innovation as well as continuity. While a prospect of the future is implicit in many histories and some novels, it is explicit in a design, which is always set in the future and imagined before it is built, even if that the future is a nostalgia for the past. The most creative architects have always looked to the past to imagine a future, studying an earlier architecture not to replicate it but to understand and transform it, revealing its relevance to the present and future. Twenty-first century architects need to appreciate the shock of the old as well as the shock of the new.[45]

Coproduction

From its inception, the weather and climate have been essential to the evolving tradition in which architecture is synonymous with landscape. Despite the burgeoning environmental movement in the 1960s, anthropogenic climate was not widely acknowledged by scientists until the mid-1970s.[46] In Britain and the many other nations where "romantic modernism" remains an abiding influence and enduring "creative myth", its increasing relevance depends on anthropogenic climate change, which is now the principal means to consider the relations between nature and culture. [47] Many of the proposed "solutions" to climate change reaffirm a faith in technological progress that has been a principal cause of anthropogenic climate change, and are unlikely to be implemented due to insufficient scientific knowledge and political inertia due to conflicting agendas of countries and corporations.[48] In a parallel scenario, the rhetoric of sustainability tends to reduce architecture to a technical issue and the architect to a technocrat, employing a debased empiricism devoid of the poetic and practical implications of Evelyn and Colvin's environmental research.[49] Climate change is not only a scientific concern. The dangers posed by anthropogenic climate change are real and need to be addressed when and where possible. But climate always changes, whether by human agency or other means. In offering a dialogue with the changing environment, recognising the weather as a stimulus to the imagination, and formulating designs that are equivalent to histories and novels, the landscape-architecture tradition is compatible with a complex, creative and contextual engagement with climate

42 Lasdun 1984: 137.

43 Lasdun, in "Interview with Denys Lasdun", revised draft, 13 June 1979, p. 9; Lasdun 1984: 139.

44 Ricoeur 1965: 22.

45 Edgerton 2008: 212.

46 Carson's principal concern is the effect of pesticides on wildlife. Carson 1987: 277-297.

47 Norberg-Schulz 1996: 154.

48 Glover 2006: 22-23, 28-30, 86-88, 246-251; Hulme 2009: 363.

49 Jenner 1995: 544-546.

change that is not only driven by fear and may stimulate cultural, social and environmental benefits, whether at a local, national or regional level.

As an alternative response to anthropogenic climate change, the continuing value of the term "nature" has been questioned recently because nature's separation from culture encourages its exploitation, while encouraging a burgeoning fascination for unfettered nature that allows some sites to be protected and others to be overdeveloped. However, eradicating the term "nature" will aid not hinder its exploitation because commercial, industrial and national interests would be without restraint. As an idea, "nature" is a human construction. But the places, species and phenomena that we include within nature are real and not solely subject to our imagination and will. Just because we've named something does not mean that we have made it, or even understand it, however extensive our influence.

Contemporary technologies – mechanical and digital – influence urban and rural landscapes. For accuracy and efficiency, a modern-day tractor is guided by GPS, a satellite navigation system. At a casual glance, a landscape may appear to be subject to human order, and no more natural than another "cultural" artefact. But it is really teeming with life forms that are subject to their own rhythms and intertwined in a complex network of relations with other life forms, including humanity. The English origin of the term "wilderness" is self-willed land.[50] According to the entomologist Edward O. Wilson, "insects are the little things that run the world".[51] Thriving everywhere, they so greatly outnumber humans that their combined weight outweighs the human population by six times, and their history with the plant world is 400 million years older.[52] Even in a suburban garden there are likely to be around 1500 insect species and a much larger total population. Human decisions influence other life forms but they do not control them. In newly industrialised England, the moth *Biston betularia* mutated as its habitat was transformed in just a few decades. Renamed *Biston carbonaria*, its pale wings had turned black, offering camouflage against predators in soot-clad cities.

The term "coproduction" explains nature-culture relations and the cities, landscapes and weathers we inhabit.[53] Equally, people are natural as well as cultural beings. Just as the intermingling of natural and human forces creates the contemporary weather, a building, garden or field results from the relations between nature and culture that arise during its conception, creation and use. As architecture, landscape and the weather are each a product of nature-culture relations, they inform, affect and alter each other in a complex developmental process that is never one way.

The term "author" has sustained over half a century of criticism because it has been associated with sole authority. But rather than a term such as agency, which may dissipate creativity, the 'coproduction' of multiple authors recognises that natural forces, as well as cultural ones, together create a building or a landscape. Acknowledging that authorship involves accidents as well as intentions, the contemporary sciences of climate change, ecology and complexity theory are consistent with the idea of nature as author.[54] Sometimes competing, sometimes affirming, each author may inform or deny the other, as in a feisty dialogue of distinct voices and unexpected conclusions in which authorship is temporal and shared, and the immaterial is a coproduction of nature and culture.

50 Dave Foreman, referred to in Merchant 2003: 230.

51 Wilson, quoted in Grissell 2001: 124.

52 Grissell 2001: 35, 144, 234.

53 Steve Rayner refers to "coproduction" while Carolyn Merchant recognises a "partnership" in which "both humans and nature are active" and nature is not gendered. Herbert Marcuse conceives nature as active, sometimes the "ally" to humanity, sometimes hostile. Rayner 2003: 287; Merchant 2003: 223-231; Marcuse 1972: 65, 69.

54 Merchant 2003: 230.

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Staged materiality

Gernot Böhme

I. Two bookshops

In the old city of Constance there are two bookshops, only a few hundred metres apart, but so different from each other that one could believe, going from one to the other, that one was entering another world or time. One, Das Bücherschiff, is approached by steps and a narrow entrance door. It gives the impression of being jammed into a residential house: one passes through rooms unclearly and crookedly connected to each other by steps. In actuality, the space is articulated not by walls, but by the wooden beams of half-timbering, whose spaces are filled not with bricks and mortar but with books. The beams are what shape the atmosphere of this book-shop: yellowish-brown, rather soft wood, corresponding to the warm light of the incandescent lamps. The wood gives the effect of being well-worn, irregularly hewn, old, but not aged; rather, "matured". The atmosphere tempts one to linger, to rummage. One feels no sense of being observed; one could belong there oneself. In the summer, they say, one can also drink tea in the back courtyard of this bookshop.

As for the other bookshop, Gess: entering at ground level, one slides, so to speak, past the sale bins in front, through the glass door, and onto a "conveyor-belt" running at an angle through the entire store, in actuality a marble passage. Following it, one passes the stacks of sale books and best-sellers and the cash register, quickly finding one's way to the various departments clearly indicated on the walls. Toward the rear, the store widens and receives a second floor, clearly marked, announcing its presence with a steel platform cutting into the marble path at an angle. Glass, marble, stainless steel and metal surfaces clothed in elegant grey define the atmosphere here.

The visit, one feels, must be quick and decisive. Information is at stake, and this is the place to find it.

Are these different worlds? Yes and no. The spatial organisation and above all the dissimilar materials do in fact produce a feeling of being in different worlds. One result of this difference might be that the two shops would attract quite different clientele and customer personality types. And for people of the sort who have "their" bookshop, the difference in the atmospheres of the two stores certainly will determine their priorities. But the fact that the two bookshops, as is usual, have different areas of specialisation – the one perhaps more visual arts and literature, the other more design, languages, travel, and pop psychology – is basically irrelevant. The retail book trade as a whole is so outstandingly organised – there is probably nothing in the entire world to compare to the German book trade – that one can order practically any book in any store and receive it the next day. Functionally considered, all bookshops are alike: they are terminals of the major retail booksellers. But in their atmosphere they are not alike at all. On the contrary: their functional sameness permits and indeed necessitates the differences in their aesthetic presentation. Precisely because the differences between two bookshops can scarcely be articulated functionally, they must be articulated in the design. The competition is a competition of atmospheres: here wood, rusticality and warm

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light, there chrome, glass. steel and neon lighting. And so the initial assessment is reversed. For what appeared at first glance to be the old and the new, the conservative and the progressive, the difference between two worlds, proves upon closer examination to be the broad range of variation of a single world, the Modern or Post-Modern. Both variations are the product of design, the conscious creation of atmosphere, a theatre of, and by means of, materials.

II. Material and materiality

Considered more closely, neither in the one place nor in the other must the beams carry any load or the steel bridge provide access to something otherwise unreachable. Both the half-timbering and the steel are non-functional, i.e. purely aesthetic. Or, better said, their function consists in presenting themselves. They help shape the space – they represent themselves, half-timbering and bridge – or rather, their materiality, wood and steel. The materials are, so to speak, emancipated. Their functional liberation enables them to exit as pure appearance: they no longer have actually to perform what they promise, as long as the promise is there.

And so the old call for the integrity of materials is transformed into its opposite. Its demands had forced the materials into inconspicuousness: precisely because they were supposed to correspond to function – of equipment, of buildings – they disappeared behind it. The new sensibility for materiality prevalent in current design and architecture calls for exactly the opposite. Materiality is supposed to show itself, to come forward, to help shape the atmospheres in which we live. Material and materiality thus part ways, as do the processes of making and perception.

Material is the stuff of which things are made. Its qualities are inconspicuous; they don't call attention to themselves. What is significant about material is how it responds to manipulation and stress and, no less important, how it fits into legal and economic calculations.

Qualities that have to do with the manipulation of materials, for example, are malleability, ductility, fusibility. Qualities related to stress are elasticity, breaking strength, non-flammability. Qualities attributable to a material *qua* raw matter in economic and legal calculations are above all homogeneity, standardisation and consistency of quality. As such they allow for ordering according to list, price guarantee and warranty. For the production of objects, this triad of working, stress-related and economic-legal qualities renders superfluous the question of what the objects are made of; the material, the raw matter, is defined not by its character, but by functional equivalents. This gives rise on the one hand to the dominance of "characterless" materials in current production – of particle board, concrete, plastics. It leads to the systematic construction of materials according to the qualities demanded. This is the birth of the science of materials as engineering technology: ceramics, alloys, crystalline structures and sophisticated hybrids of all three are developed with great ingenuity for specific functions.

On the other hand, the character of materials becomes autonomous: materiality becomes pure outward form. Wood, glass, steel and marble as elements of architecture and design no longer designate materials in themselves, but qualities of appearance, the more characteristic, the better. Wood may still be wood, but oak is certainly a veneer and red oak a stain. Decades ago, Jean Baudrillard spoke of the *valeurs d'ambiance*. Nowadays this phrase should probably be translated as "theatrical value".

Paradigmatic for the rift between material and materiality, between the quality of the raw stuff and its theatrical value, is particle board. But of course the discrepancy between surface and inner structure that it epitomises has precursors reaching back far into the past: not only related veneer techniques, but also architectural facings, stuccoed marble, enamelling. In fact the materialist Semper's own opera house is a prime example of the split between material and the staging of materiality, or materiality as theatre: the marble columns are stucco, the wooden panelling is painted.

This could bring us to the premature conclusion that the discrepancy between material and materiality is a perennial phenomenon, a part of culture *per se*, as it were. After all, weren't the Egyptians already masters of surface finishing, and wasn't the objective of 2000 years of alchemy the semblance of matter, i.e. the production of materiality? There is certainly truth in this. But one has to recognise that the interest in materiality as the reality of appearance is tied to particular cultural and economically-defined epochs, in short, to epochs of luxurious economy. And as far as alchemy is concerned: the absence of quantitative methods of description left no alternative but to define materials by the quality of their outward appearance. Only such a definition necessitates the warning that "not all that glitters is gold". Materiality is thus revealed as a product of economic development and of the state of science and technology.

The economy of developed industrial nations is dependent on the production of luxury articles. When basic needs are satisfied and production for war declines, the maintenance of production levels and, indeed, any growth at all, depends on the demand for luxuries and on their artificial – i.e., fashionable – or technological obsolescence. This leads to the dominance of the appearance value of products, of aesthetics over practicality. On the other hand, the development of science has deepened the rift between essence and appearance and has made the definition of materials independent of their outward form. In effect, the progress of technology has situated the level of human creativity ever deeper within the material. For the Greeks, the prototype of creativity was the craftsman giving a particular form to a given material (the carpenter, the stonemason). Today, the material itself is the actual object of creativity: what is created is its inner, not its outer form.

And so we have electronic devices in wood grain, marble-ised typewriters, express trains in white, gold, and silver, post offices in marble, department stores like castles. This development raises the question as to how materials are perceived at all, or rather – approaching it from the perspective of the object – how they present themselves. This could be related to the question of why, in the aesthetics of materials, traditional materials still dominate, i.e., why modern substances are attired in the design of traditional materials.

III. The manifestation of materiality

Materials manifest themselves with a particular character. What we designate as character is the structure of their atmospheric aura. That this character is decisive is shown by the fact that, for example, when one needs wood to create a particular atmosphere in a space – whether to achieve a sense of easiness and warmth or of prosperity and solidity – one has to give the surfaces wood-character. Under no circumstances does this simply mean that they must look like wood – although that too, to be sure. Here the texture comes into play, already giving us an important element of the character, that is, the specific way in which something displays itself. It may be the linear patterning, otherwise the grain or marbling

– or to put it in general, if paradoxical, terms: the typical form of irregularity. The significance of this paradox is currently being studied in fractal geometry and chaos theory. The results are tentative and therefore uninteresting for the aesthetics of reception, but they could become important for the aesthetics of production, particularly when the design of types of irregularity is at issue. This gives us a preliminary answer to the question of the aesthetic prevalence of traditional materials. Up to this point, only the one or the other has been possible for human creativity: either the regular – from Plato's ideal bodies to the symmetry of wallpaper design – or the irregular – from the spontaneous idea to *peinture automatique* – with one exception: handwriting.

Handwriting – typical irregularity, non-conceptual recognisability. This is one way in which materials show themselves, one which nature performs for us in unending variety but which up to this point has scarcely been successful in industrial production, though perhaps it was never intended. But in order to let a particular materiality appear, it is not only important that the surfaces look like … [this or that]. That would be colourless and flat, and would expose itself as an imitation. To be sure, whether it is an imitation or not is irrelevant when the appearance of materiality is at issue. But clearly there are further dimensions in which materiality characteristically manifests itself, without which an imitation would not be sufficiently watertight: for example, colouration in all its nuances, the microscopic structure of the surface, i.e. the degree to which it isn't surface at all, its haptic qualities, one could say. The crucial point is precisely that these qualities do not usually have to be verified haptically at all – they are atmospherically perceptible even without the concrete sense of touch. At a physical level this is doubtless connected to the optical features of the surface formation, to absorption, diffusion, refraction. But with respect to the aesthetics of reception, the issue here, as with colour, is what one can call its synaesthetic character: whether a material gives the effect of being warm, gentle, repellant, smooth, damp, obtrusive or reserved. This kind of character always affects several senses, and for this reason can be perceived representatively through different senses, or, from the perspective of the object, can be produced through different material qualities: the cold through blue, the repellant through a glossy finish, the shrill through colour contrasts.

If we call the first dimension in which materiality manifests itself its physiognomy, the second would be its synaesthetic character. A third dimension is the social character. Materials have a social character to the extent that they, by reason of their use of culture or tradition, stand for something: the 1920s, for example, or cosiness, grandeur, in some cases also the natural. But that brings us to a new subject.

IV. The iconology of materials

Only recently has the discipline of art history become aware that such a thing as "The Language of Materials" exists. Inherently, the language of materials is surely as old as art itself. Up to this point, however, the study of art, with its emphasis on the language of forms, has not given sufficient weight to the fact that materials, too, are carriers of meaning. In any case, since iconology is the study of images, it would be better to speak of the semantics of materials. The semantics of materials is based partly in their origin, partly in the privileged access of particular strata of society to certain materials, but partly also in sheer convention, whether fashion or ideology. Of course it was significant that a material came from the Holy Land or that the stones of a particular building were fragments of the Bastille. And, for example, if the Roman emperor had a monopoly on Tyrian purple or a particular Egyptian porphyry quarry, then purple and porphyry stood for imperial grandeur.

What is interesting is how ideology and convention can also invest a material with the semantics of origin, even when it is in fact found everywhere. In the nineteenth century, for example, granite acquired significance as the material of the fatherland, even though the German fatherland or Prussia is hardly distinguished by the presence of granite, but more by the absence of any other usable kind of stone. The language of materials in the history of art follows still other cultural patterns besides origin, privilege and ideology: for example, the alchemistic classification of the seven metals or their hierarchical ascription to the ages of the world – the golden age, the silver age, the iron age. Through the use of a particular material, then, works of art can represent the world order or the hierarchical order of society implicitly, i.e. in addition to or through their sculptural form.

To be sure, the language of materials as identified by the history of art is only a very small part of the larger potential of materials for significance in the aesthetic constitution of everyday life. Here it is better to speak of a social character than of a language. From the perspective of art history, the effect of a material's social character presents itself as a code which must be deciphered. This is due precisely to the conventional nature of this character. The difference between a lion of bronze and one of granite is only perceptible to us at the synaesthetic level. But when a viewer no longer shares the convention, the fact that the use of one material as opposed to another is symbolically something can only be mediated through art historical hermeneutics. In contrast, leather as a material for car upholstery exudes elegance, loden cloth conveys a sense of the rustic, while stainless steel is chic. These effects are directly perceptible, but their conventional character can fade and in some cases even turn them into their opposite. A typical example is the history of the aesthetic effect of concrete, "which in the first half of our Century was invested with positive, almost messianic significance, and in the meantime has degenerated into a popular metaphor for vices such as contempt for humanity, narrow-mindedness, and heartlessness". (Raff 1994: 15)

V. Sensing material

The creation of an atmosphere through the character of materials can indeed be called magic. What is magic? Conjuring, telekinesis, the triggering of effects through signs. Magic is puzzling, it is incomprehensible. Because cause and effect are not of the same kind, it is dangerous and insidious: it can also work against our will. All of this applies to the effect of materials in the theatre of the world in which we live. Most remarkable and incomprehensible of all is how this effect can be had through mere appearance, i.e. through materiality without material. In fact, the pure aesthetic of materials assumes we won't handle or touch them. What produces an atmosphere of coldness or softness would probably be robbed of its effect if one tried to verify its promises by touching. On the other hand, it is at a very physical level that the synaesthetic character, or the character of the atmosphere produced, moves us. Even simply to confirm the qualities of a material on its surface would cause the atmospheric effect, for which it is in fact employed in design and architecture, to collapse. The effect is deep and subcutaneous, as a rule even unconscious. Only afterwards, when we already feel a certain way in a space, when the atmospheric effect of the materials has already completely bewitched us, do we perhaps try, irritated, to identify its origin. This is what is eerie and dangerous. The same is true for the social character of materials. As opposed to the discipline of art history, we have asserted that this character is not usually read, but is sensed. The noble, majestic quality of a material, its elegance or old-fashionedness are sensed. But this does not mean merely that the material is able to point to or signal the noble, the majestic, the elegant, or the old-fashioned; rather, it seems to

radiate them. They must in some way be connected to, anchored in, its material qualities. This is why it is sometimes difficult to distinguish clearly between the synaesthetic and social character of a material. Is solidity synaesthetic or social? Probably both. The solidity of the material stands for the solidity of the social conditions in which it is employed.

Materiality can certainly be used to make magic. Designers, interior decorators, set designers do it. But what are they relying on? What gives them the certainty that their magic will work and that their conjurings will reach the public? How is it possible for us to be affected physically by something with which we have no physical contact at all? Magic?

The answer to all these questions probably lies in the fact that, besides the perceptual and work-related relationships, there is a third relationship to material which we will call the medial. In the working relationship we are involved with the material as raw matter. When we grapple with it, intend something with it, seek to form and change it, certain qualities become manifest: material is elastic, soluble, fusible and brittle. In the perceptual relationship we are involved, not with material i working stuff, but with materiality, the pure form of its appearance. Here we encounter its physiognomy, its synaesthetic and social character. But we can also be inside the material, walk on it, sit on it, rest in it and – eat it.

This relationship to material is dominant in early childhood, before the working relationship and distanced perception have developed. The fact that we exist as bodies among other bodies and live physically within different media is the basis of our direct physical experience of materials. We experience softness or hardness, wetness, dryness, coolness, and warmth on, or better, in our own bodies. Aristotle designated this special perception as the actual touching (*Haphe*). A more precise translation would be sensing. To sense a material is not to take note of its qualities by touching its exterior. This would involve more than just the surface, as Aristotle says, our flesh is simultaneously the medium and the organ of this sensing. Thus we experience and recognise firmness, softness, warmth and coolness in our experience of ourselves. The sensing of materials is in this way a sensing of oneself. In this physical sensing of ourselves lies the foundation of the later perception of materials as well. To a certain degree it is never lost, for we remain bodies among other bodies and live within media. But the more distanced approach to material and materiality preserves these experiences only as a background memory. The magic of the material is disclosed, even if we inevitably fall for it again and again. And why not? How impoverished life would be without this element of everyday regression.

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Non-refereed Papers

Ulrich Müther (1934-2007): Cast in concrete

Matthias Ludwig

Background

For a long time, the work of "formwork virtuoso" Ulrich Müther has received little attention. The main reason for this is the fact that, for most of his life, he practiced as a structural engineer in East Germany – behind 'the iron curtain'. Despite his isolation, Müther wrote an important chapter in the history of precast concrete construction with his unbelievably light concrete buildings that are of equal importance to the works of Heinz Isler in Switzerland[1] and Felix Candela Outerino in Mexico.[2]

His buildings stood out not only for their construction, but also for their exceptional spatial and architectonic characteristics that were defined by their construction material – concrete.

After constructing his graduation project, a multi-purpose hall in Binz on the island of Rügen, Müther quickly set to work on a succession of so-called "hypar shells", mainly, but not exclusively, in East Germany. His expressive shell roofs reflected the spirit of the age. Only a few centimetres thick, the concrete shells achieved large, unsupported spans and provided a tangible expression of the frequently invoked technological progress of the 1960s. Primarily designed as part of attention-grabbing, stand-alone public buildings, these expressive shell structures stood out from the uniform greyness of the German Democratic Republic's prefab buildings. They were "bold solitaires" (*k*ühne *solitäre*) (Dechau 2000) with evocative names such as *Water Lily*, *Teapot* or *Maple Leaf*.

Ulrich Müther referred to himself as a "formwork virtuoso" (*Schalenbaumeister*) in order to underline his broad range of skills as an engineer, architect and entrepreneur. Over a period of 30 years, he produced more than 50 concrete formwork buildings, all of which were designed, engineered and fabricated by his own company "*VEB Spezialbetonbau Rügen*" – with specialist machinery imported from the "capitalist West".

Being labour-intensive, yet requiring little by way of resources, Müther's buildings fitted well into the shortage economy of the East German system and that afforded him a secure niche for his highly specialised company. Although Müther was never a party member, politicians frequently used the shell structures as showcases to promote positive perceptions of socialism.

With the political turnaround of 1989, many of Müther's shell buildings became vacant. Today, some have been adapted for new purposes, but others were neglected and became derelict or were demolished. In 2000, the proposed demolition of the *Maple Leaf* in Berlin caused great controversy amongst professionals and the public, but campaigns to save the building did not succeed and the building was torn down and replaced with a conventional hotel building.

Ulrich Müther's concrete shells – a typology

In the following photographic section, Ulrich Müther's shell buildings are categorised in accordance with the different design principles used in shell construction. Because the delicacy of the design and the underlying design principles are often more clearly visible when the building is in the early stages of construction, the

1 See Ramm & Schunk 2002.

2 See Faber 1963.

documentation for each project is presented as a set of two images – one picture showing the building in its 'raw' state as a concrete shell during construction, and the other showing the completed building. The differences are striking – in their 'raw' state, the buildings almost always resemble autonomous sculptures created by an artist rather than precision-engineered designs produced by an architect or engineer. At the same time, the images highlight the sophisticated design principles of the shells, their minimal thickness and material economy, which stood in stark contrast to conventional designs. Some of the shells were only a few centimetres thick whilst spanning a building area of hundreds of square metres. The lightness of the shell was, however, disguised by the bulkier façade elements once the building had been completed. To that effect, the construction photographs of Müther's ultrathin concrete shells demonstrate the superiority of his methods and his advancement of a new techno-aesthetic paradigm that also marked the work of his colleagues in the West.

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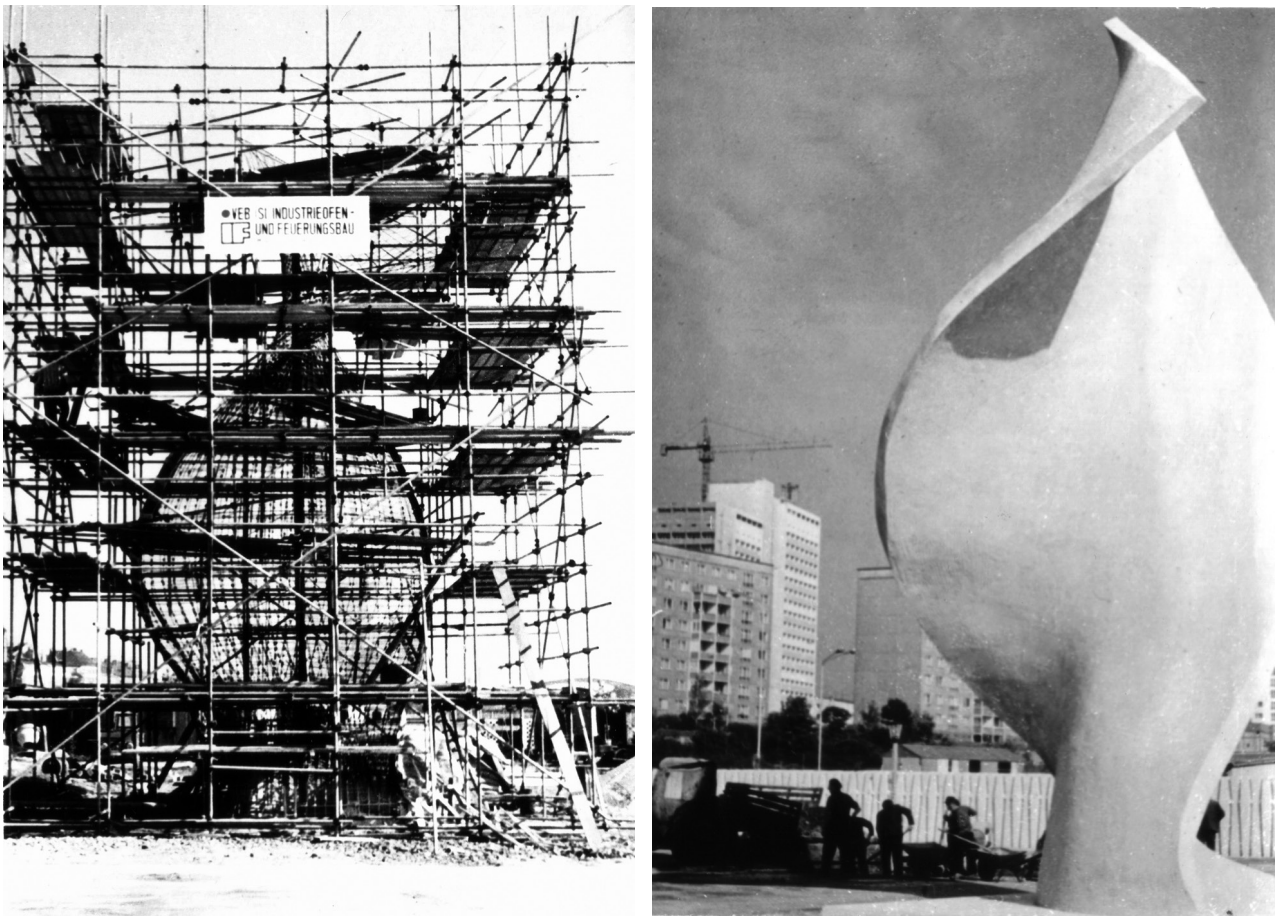
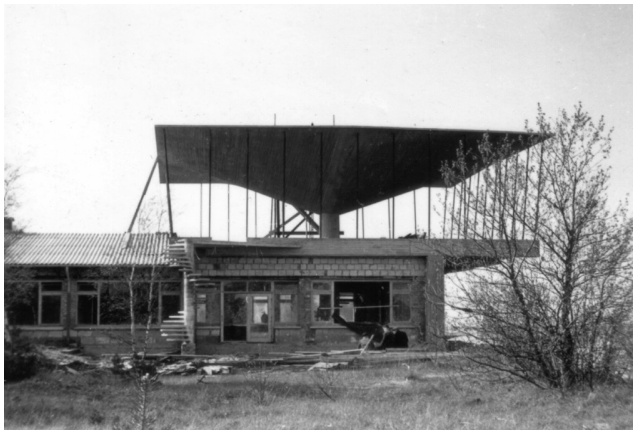


Großplastik (Large Sculpture) in Magdeburg (1972). Free double-curved shells, height 12m

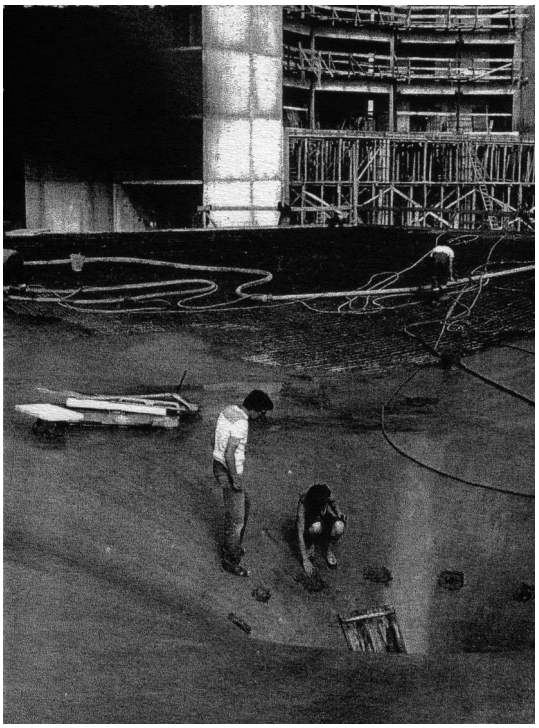


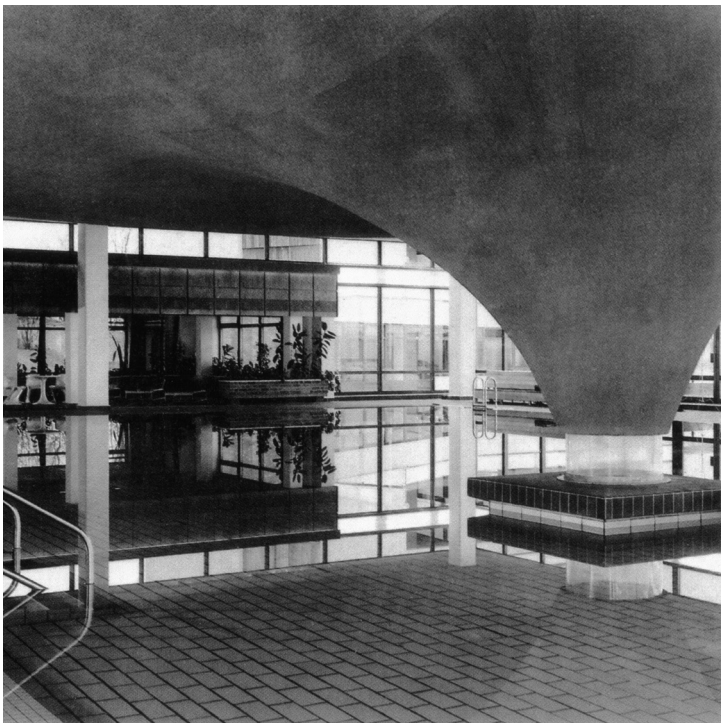
The *Inselparadies* (Island Paradise) restaurant in Baabe (1966). Umbrella shell consisting of four hypar shells, thickness 8cm, 17.6x17.6m

Messehalle (Exhibition Hall) Rostock (1966). Two hypar shells offset from each other, thickness 7cm, 2x2x20m

The *Teepot* (Teapot) restaurant in Warnemünde (1968). Shell structure consisting of three hypar shells, thickness 7cm, radius 20m

Strandwache 2 (Lifeguard 2) in Binz (1981). Two double-curved shells assembled to form a box, thickness 3-5cm, 5.5x5.5m





Swimming pool roof for the Central Committee Centre in Sellin (1977).
Asymmetrical suspended shell without intermediate supports, thickness 9cm, 24.4x33.3m

All images courtesy of the Müther Archiv, the Faculty of Architecture and Design, Hochschule Wismar - University of Applied Sciences - Technology, Business and Design, Germany

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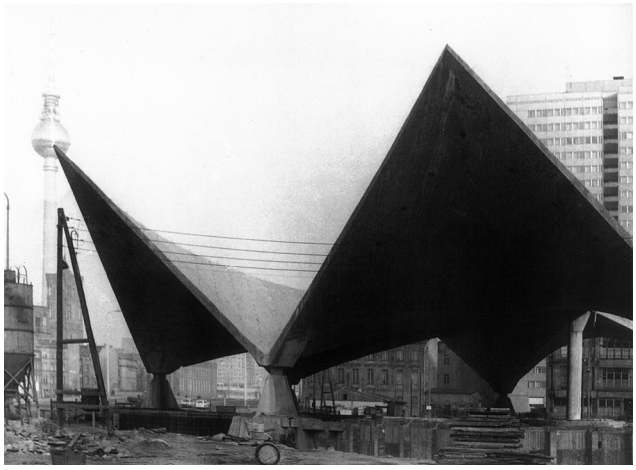
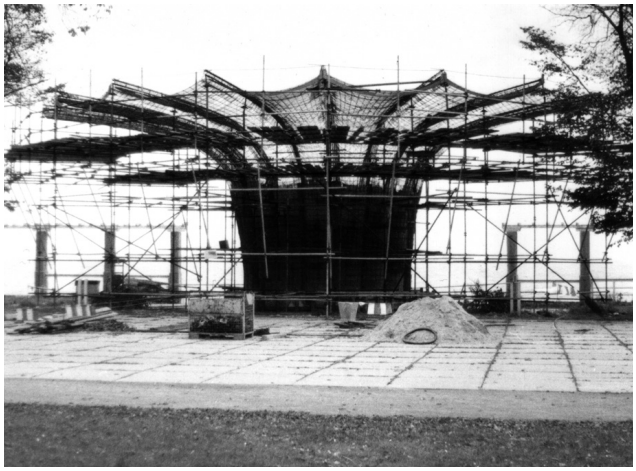


The *Ahornblatt* (Maple Leaf) restaurant in Berlin (1973). Five assembled hypar shell segments, thickness 7cm, 5x22x35m

The *Seerose* (Water Lily) waterfront pavilion in Potsdam (1983). Eight-part rosette made from hypar shell segments, thickness 7cm, diameter 23m.



Kurmuschel (Seashell) music pavilion in Sassnitz (1987). Seashell-shaped cantilever, thickness 5-15cm, radius 11m

The limits of materiality: On Junya Ishigami and Philippe Rahm

Tom Daniell

If architecture arose from the necessity of creating shelter, then it might be regarded as essentially the arrangement of more-or-less rigid, opaque materials to form more-or-less hermetic containers. At a more abstract level, to see architecture solely in terms of shelter implies that it is essentially a means of making the natural environment more hospitable, or a method to increase the range of natural climatic conditions within which humans can realistically survive – much like clothing or air-conditioning. In his 1969 book *The Architecture of the Well-Tempered Environment*, Reyner Banham contrasted two ways in which a "savage tribe" might exploit the environmental potential of fallen timber on a cold night: to build a shelter, or to make a fire. Taking these as two archetypal extremes on the spectrum of architectural possibilities – form versus energy, material versus immaterial – we can find contemporary analogues in the work of Japanese architect Junya Ishigami and Swiss architect Philippe Rahm. Both attempt to trace and manifest the performative and physical limits of the architectural enclosure. In Banham's parable, Ishigami would attempt to discover the minimum thicknesses and maximum spans of which the wood is capable, whereas Rahm would exploit the potentials of combustion and smoke.

A former apprentice of SANAA, Ishigami creates objects that transcend the categories of furniture, sculpture, installation, and building. They comprise elements that seem suspended or merely touching, lacking any plausible means of support. This is structural exhibitionism by omission – not the manifest agility of a gymnast, but the illusions of a stage magician. From his 2004 debut *Table* (a thin sheet of steel made to span nine metres by giving it a pre-stressed camber that settles flat under its own weight), to the 2007 installation *Balloon* (a one-tonne armature of aluminium framing and skin made weightless with precisely the right amount of helium), to the 2008 KAIT building (an almost-flat roof sitting on a forest of thin

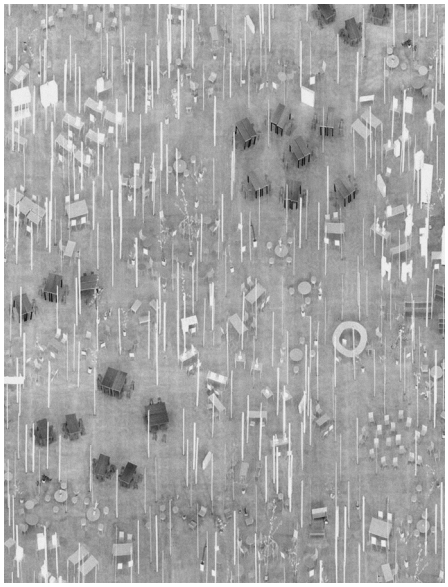


Fig. 1 (opposite page) Junya Ishigami, 2008. Balloon, Tokyo, Japan. A frame and skin made of aluminium weighing one tonne, but filled with precisely enough helium to make it as light as air. [Photo: Courtesy Junya Ishigami, 2008]

Fig. 2 (left) Junya Ishigami, 2008. KAIT Workshop, Kanagawa, Japan (model). [Photo: Courtesy Junya Ishigami, 2008]

Fig. 3 (right)Junya Ishigami, 2008. KAIT Workshop, Kanagawa, Japan (interior). A glass-clad student hall with a flat roof supported by an array of thin white steel bars, some in compression and others in tension. [Photo: Courtesy Junya Ishigami, 2008]

Fig 4. Philippe Rahm, 2012. Evaporated Rooms, Lyons, France.

An apartment refurbishment designed around naturally occurring atmospheric gradations of humidity. [Photo: courtesy Philippe Rahm 2012]

steel bars, their orientation and thickness cumulatively strong enough to support it, but only just), Ishigami's work is a didactic demonstration of the limits of material performance. Indeed, he has at least once crossed the line, with the collapse of his barely-visible carbon fibre installation at the 2010 Venice Biennale. The more extraordinary the effect, the less noticeable it is – his house proposals seem to leave the surfaces of their sites untouched, like fragile open-topped boxes turned upside down and placed lightly on the ground, giving no hint of the sophisticated foundation systems that this entails.

Drawing on the ecological insights of Banham and the pneumatic architectural experiments of the 1960s, Rahm produces nuanced physiological effects that act on the skin ahead of the eyes, categorising his work with terms more common in mechanical engineering than architectural design: radiation, conduction, convection, pressure, evaporation, digestion. Passive and active climate-control techniques that are conventionally used to produce homogeneous interior environments are deployed to create experiential variety in illumination, temperature and humidity instead. Architectural design has always been about the creation of appropriate moods, but Rahm operates directly on the atmosphere (understood in material, not metaphorical, terms), which drives the composition and performance of the physical building envelope. Despite the relatively simple, box-like appearance of the buildings, they are experienced as amorphous fields, shifting clouds of delicately varying ambience.

One might see these two approaches as polar opposites, or as tending toward the same asymptote at which architecture vanishes. Ishigami reduces tectonics to graphics, structure to calligraphy, and spatial boundaries to the thinnest, lightest, or most transparent condition possible. Rahm entirely dissolves spatial boundaries into graduated fields of heat, light, or moisture. Yet both reveal the tension inherent in any apparent stability in architecture. The reductive clarity of all this work provides stark and beautiful, demonstrations of two of the most fundamental and unavoidable necessities for all buildings: to brace against imminent collapse, and to constantly replenish lost energy.

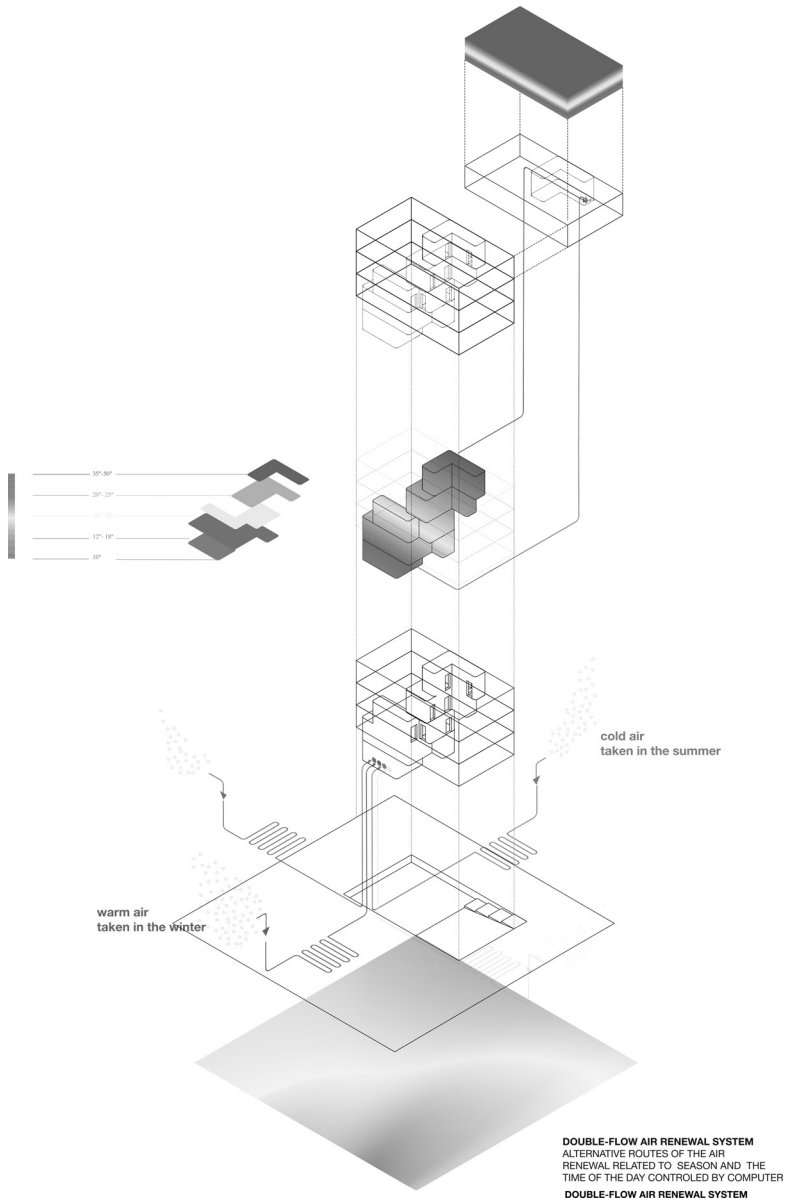


Fig 5. Philippe Rahm, 2009. Convective Condominium, Hamburg, Germany.

An apartment designed with terraced floor slabs and differing ceiling heights to create a varied thermal landscape. [Photo: courtesy Philippe Rahm 2009]

Fig.1-10 Heygate Estate (series) [Photo: Author, 2012-2013]







Immaterial densities: Revealing an alternative Heygate Estate

Felipe Lanuza Rilling

Built between 1970 and 1974 after the demolition of a dense fabric of old Victorian tenement buildings, the Heygate Estate in the London Borough of Southwark is the product of the late phase of urban and architectural modernism associated with the British Welfare State. After an initial phase of prosperity, the estate began to deteriorate and developed a negative reputation. Today, after a controversial eviction process lead by the local council, a set of 23 buildings containing 1260 housing units are almost completely vacated and awaiting demolition in order to give way to an ambitious regeneration project. The forced displacement, gentrification and privatisation of public land and the felling of almost all trees, which were planted as part of the modernist project and constituted a dense urban forest, were strongly contested by local campaigners and communities.

Suspended between past and future, the Heygate Estate now appears as a vacuum detached from regular urban activity. This interim condition opens up opportunities for alternative interpretations and modes of occupancy, holding histories not inscribed in the formal structures of the present city and offering possibilities outside the framework of an imposing modern urbanisation (cf. Aureli 2010). It suggests a future that is still open, while processes of decay and the invasion of nature progressively erode a place that has been severed from the urban matrix. These kinds of places constitute absences in the city, first documented by David Plowden and other urban photographers of the 1960s, who turned their gaze to the abandoned urban sites which started to flourish in the post-industrial cities of Europe and the USA, as Ignasi de Solá-Morales observed (1995). For them, photography offered an important means of exploration of their potential value, beyond the formal documentation or portrayal of cities.

The superimposed photographs of the Heygate Estate depicted in this issue of *Interstices* are intended to recreate the sense of richness and openness that now emanates from the site. The transparency of the images intimates both their mode of production and reading, suggesting an immaterial density and depth. Multiplicity and simultaneity are generated by allowing the intersection of different times and perspectives in a single image: interrogating the materiality of the Heygate Estate and its persistence in time, months before its anticipated demolition.

Photography etymologically means “writing of light”, and a photograph itself is in a way a projection of the light of a past moment, hence the proposed images can be seen as palimpsests of light that reimagine the site both as memory and projection. The metaphor of the palimpsest is used in urban history to describe the way in which territories accumulate traces and elements of past uses and physical configurations: different stages of history “inscribed” in the present materiality of the city. Here, however, the idea of the palimpsest is shifted to a field more related to perception, composing an atmosphere that reveals traces and fragments of current and past states of the site, representing the richness of an absence about to disappear.

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Fig. 11 (above) Superimposition of two photographs. The 1972 photograph looks towards buildings in Gurney Street (subsequently demolished) from a building in Pollock Street. It shows the old buildings prior to their demolition in the foreground, and one of the high rises of the Heygate Estate already under construction in the background. The second photograph corresponds to the current view and is taken from the same position and perspective as the 1972 photograph. [Photo: Author, 2013]

Fig. 12 (previous spread) Superimposition of seven photographs. The background photograph was taken prior to the construction of the Heygate Estate (ca. 1967) in what was then Pollock Street. Superimposed are six photographs taken on the 14th of May 2012 in the same area prior to the demolition of the Heygate Estate. [Photo: Author, 2012]

Coproductions: Material, light, architecture

BEAMS Light Festival 2012
Report by Sandra Karina Löschke

Coproductions is an interdisciplinary design studio offered as a collaborative venture between the UTS Masters in Architecture and Masters in Lighting Design. Collaborating in teams of three to four, students explored the interplay between material, light and space to create illuminated public sculptures for the 2012 BEAMS light festival. The challenge was to create works that were innovative in their combined use of lighting and material technologies but also functional and engaging, making a contribution to the activation of the neighbourhood.

BEAMS was an initiative of the Chippendale Creative Precinct, a group of art galleries, designers, video producers and digital media companies who joined forces to attract life to the traditional working class area and raise its profile. The event was supported by Frasers Property Australia whose Central Park development on the adjacent Carlton Brewery site is expected to bring thousands of new residents to the area in coming years, and the City of Sydney whose ongoing initiatives to activate Sydney's laneways successfully injected new energy into previously isolated urban areas.

Over a period of six weeks, postgraduate architecture and lighting design students toiled over large sculptural installations and urban furniture pieces. The interdisciplinary team structure was intended to overcome traditional models of collaboration which regard lighting as a secondary consideration that follows the completion of the architectural design phase as an afterthought. In contrast, mixed teams of *coproducers* explored the full potential of material and spatial possibilities, broadening the disciplinary horizons of all involved.

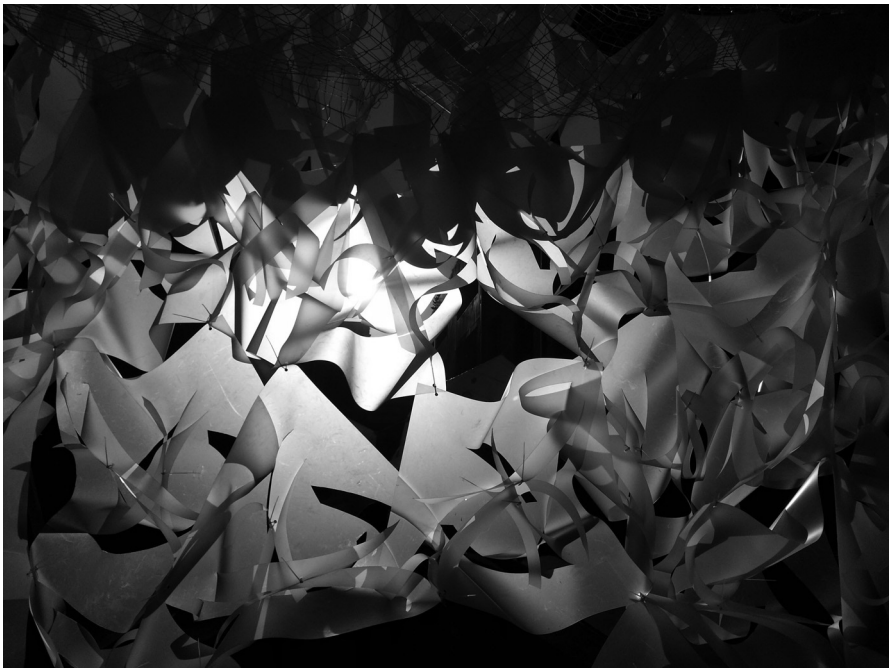
Experiments were set up, documented and evaluated; partial proto-types for structures were tested, adapted and refined; materials were sourced, sponsorships negotiated and elements prefabricated; potential sites were surveyed, lighting conditions analysed and fixtures negotiated with building owners. On the afternoon of the festival day, eight teams formed by eighteen architecture students and six lighting design students finally made their way to the site to set up their pieces within only a few hours before darkness set in and the spectacle began. Between 5pm and 10pm, Balfour Street and the surrounding streets leading off Abercrombie Street were pedestrianised and illuminated for the inaugural BEAMS festival. An estimated 5000 visitors descended upon the small neighbourhood area, socialising, celebrating and curiously exploring the illuminated objects on show.

Ideas about audience engagement and participation were addressed by the student teams in a number of imaginative ways. SOCIOlantern, an "infrastructural object" fabricated from corrugated cardboard ribs, layered with reflective foil and integrated lighting, invited public engagement by returning a sense of spectacle to the urban landscape. Combining digital tectonics with seating and illumination, the project explored the interstice between art and utility. The modular bench was anticipated to behave like a lantern, inviting passers-by to pause, interact, and reclaim the nocturnal spaces of the city. The team argued that the design of urban furniture was largely uninviting in nature, conceived to prevent unnecessary

activities and lingering. This was something that they sought to oppose with SOCI-Olantern in rethinking the functions of lighting and seating but also reconsidering the aesthetic potential of urban "infrastructural objects" and their capacity to promote meaningful activities.

Figures on this spread: SOCIOLANTERN – an infrastructural object that combines lighting and seating by UTS architecture students James Lauman, Jordan Soriot, and lighting design student Ilana Thorpe. [Photos: James Lauman and Jordan Soriot, 2012]

While the SOCIOLANTERN project promised a sense of utilitarian extravagance, other installations were less useful but no-less spectacular and engaging. JELLY FISH, a project by students Hyuna Lee, Jane Lee and Mattia Bravin, transported visitors into a sphere of floating luminosity with a hanging sculpture fabricated of translucent, warped plastic sheets. Hovering a metre off the ground, the trapezoidal structure provided a discrete opening, inviting visitors to slip inside to enjoy a dive into an immersive world of radiant colour surges. At the heart of the project were the material and tectonic qualities of translucent plastic sheets. Cut, warped and interconnected, the sheets materialised as a light-weight structure which assumed a unique form determined by the geometry of the cutting patterns and self-weight of the material.



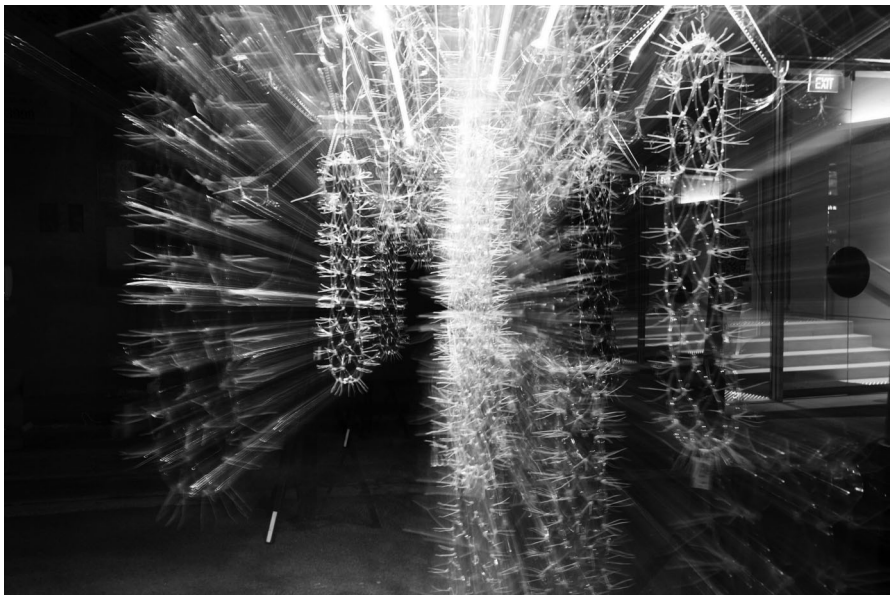
Figures on this spread: JELLY FISH – a luminous installation that provided immersive experiences for visitors, designed by UTS architecture students Hyuna Lee, Jane Lee and Mattia Bravin with lighting design student William York. [Photos: Hyuna Lee and Jane Lee, 2012]

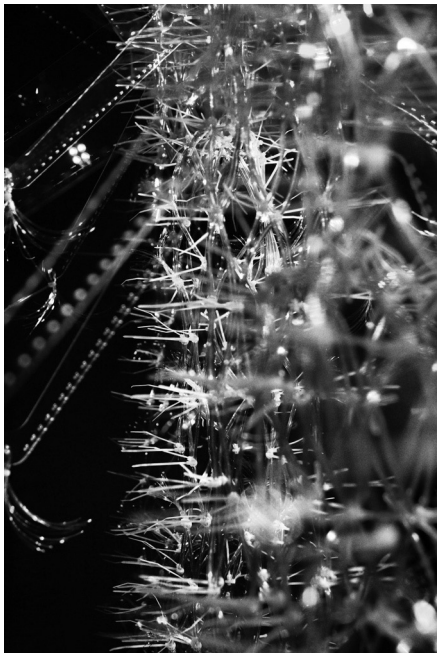
Figures on this page: JELLY FISH – a luminous installation that provided immersive experiences for visitors, designed by UTS architecture students Hyuna Lee, Jane Lee and Mattia Bravin with lighting design student William York. [Photos: Hyuna Lee and Jane Lee, 2012]

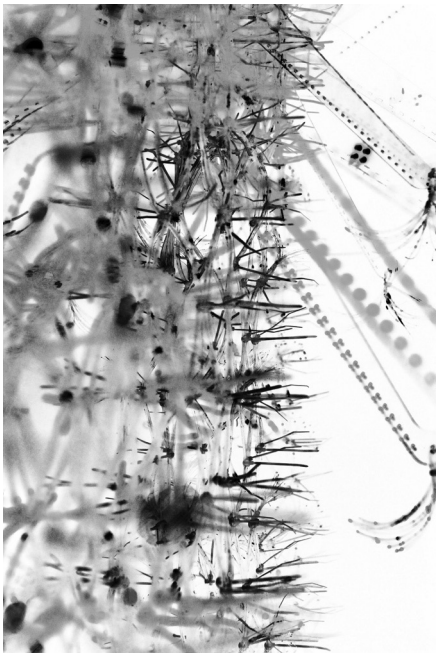
Figures on this page: NYLON BEAM – an installation that invited visitors to interact with the light and shadow effects of the installation by drawing. Designed by UTS architecture students Mona Parvaresh and Luxsina Thunyaprateep with lighting design student Namrata Madan. [Photos: Mona Parvaresh and Luxsina Thunyaprateep, 2012]

At the UTS Architecture School, interdisciplinary collaboration and public engagement through built projects are becoming important parts of the postgraduate curriculum. Events such as BEAMS offer opportunities for testing students' design rigour and collaborative skills in the face of real life situations where the pressures of resourcing, fabrication, erection, budgets and time lines are experienced firsthand. Direct contact with end users provides a valuable testing ground for ideas and assumptions that are rarely interrogated in a university environment. With this type of studio, the UTS Architecture School attempts to support students in developing initiative and independence, confidence in decision making and negotiation processes, and leadership and team skills. The UTS student participation in BEAMS 2012 indicates that this direction is proving successful.

The project was instigated and co-ordinated by Sandra Karina Löschke of the UTS Architecture School and Michael Day of the UTS School of Design.







Figures on this spread: NERVES designed by UTS architecture students Ying Su and Chen Zhuang with lighting design student Parnmoonin Komkham. [Photos: Ying Su and Chen Zhuang]

Athfield Architects

by Julia Gatley
Review by Marshall Cook

Julia Gatley, *Athfield Architects / Julia Gatley*. Auckland, N.Z. : Auckland University Press, 2012. ISBN: 9781869405915 (hbk.)

The precious history of architecture in New Zealand is rarely explored as comprehensively as in architectural historian Julia Gatley's book on Athfield Architects. It is both a catalogue of design projects and a portal to the authors of the works. But essentially, it is about the prime protagonist Ian Athfield. Although broken down into four progressive parts from “formative student” and “early practice” to “boom times” and “public works”, it really is about Athfield the architect and then Athfield the assemblage.

His architectural beginnings are clear, blunt and seemingly counter-cultural. Illustrations of his student work that expose the raw nerve ends of a devoted designer are signed off as I. Charles Athfield or simply Ath. His early unbuilt works that remain as designs on paper carry the full illusion of reality. Influences of the Christchurch masters Beaven and Warren appear, disappear and re-appear but within a unique palette of materials used in original ways. Sometimes stressed to their limits the buildings under construction form the inverse case to ruins. The ad hoc nature of the construction process, the light and shadows of framing, the laying of scaffolding, the smell of newly-sawn wood, and that incomplete state of construction which gives hope and anticipation is the apparent driving force behind Athfield in the early years. It is an architecture that stands against or at the very least in contrast to a cultural trend to continually re-invent its history. Early encounters with adaptive re-use of heritage buildings explored both the financial and social values of the existing fabric of the city: “heritage starts with a good idea

tomorrow". As comfortable as Athfield is with the new and the old he was equally at home with pubs, churches and the odd brothel.

"My thinking has always been comprehensive and inclusive not focused and exclusive."

The most significant work, a regrettably unbuilt housing project in the Philippines in 1975, was a turning point for architecture. International interest in the design principles and the technical advances made it a benchmark for social housing in developing countries.

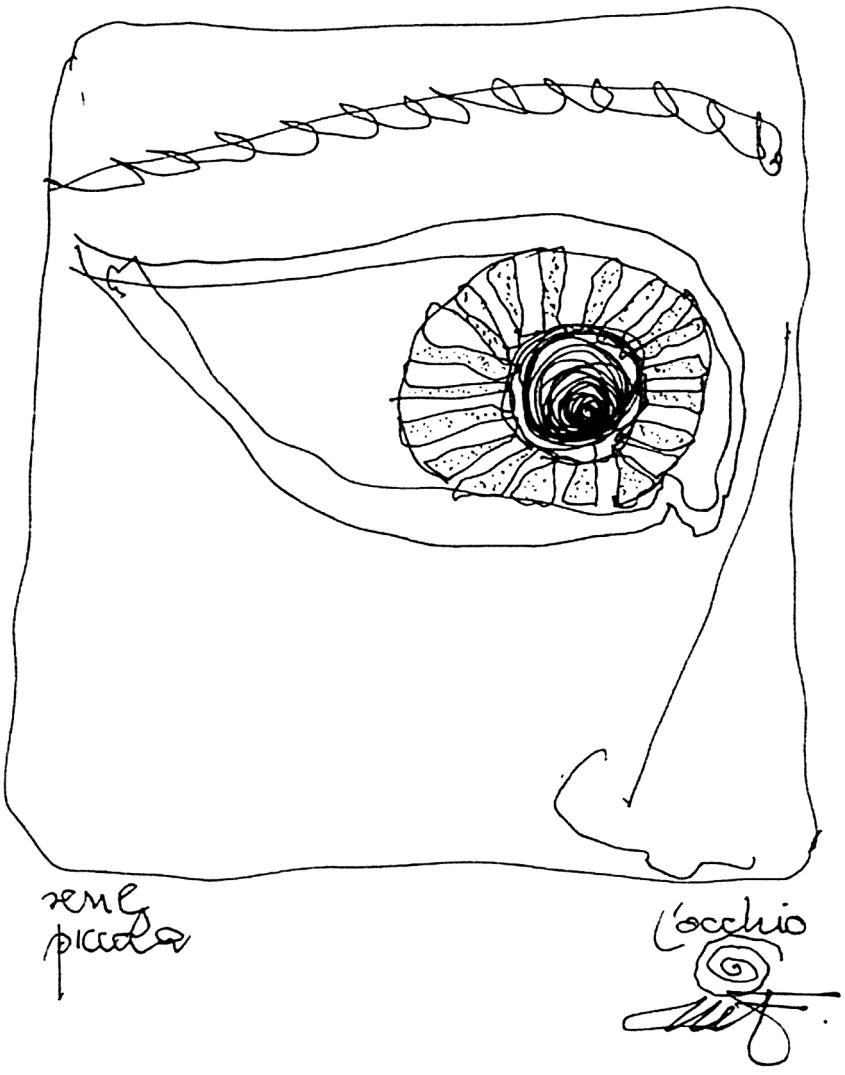
Other competition-winning entries such as School of the Future, also unbuilt, were equally significant designs that would have changed the learning environment of the 1990s. Also illustrated are a few unbuilt buildings that would have challenged the contemporary city. It was also the period when Athfield was an active partner in a number of development projects.

It is in the final section of the book that the work of Athfield Architects displays the firm's depth of design skills. Given the volume of work passing through the practice it would be easy to adapt standards to suit work load. It would appear that the opposite happened. As the office has evolved so have the skills of the design managers. As much as it is obvious that Wellington is Athfield's city, the firm has a strong design-led foothold in Auckland and Christchurch. It also produced the brilliant war memorial in London's Hyde Park.

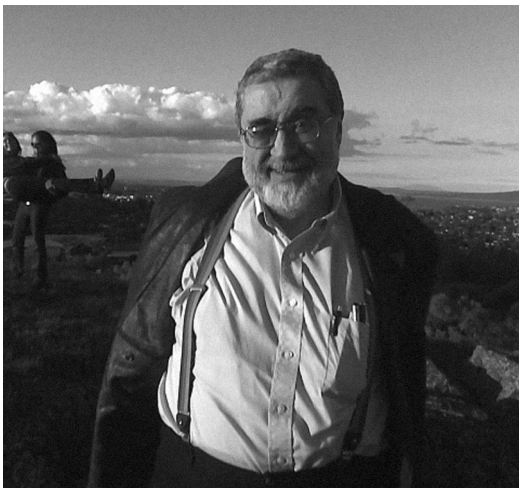
There are a number of projects produced in collaboration with other practices that are clearly acknowledged and brief introductions to future projects show the possibilities and hopes of the staff. Although presented as a democratic working family there have been financial hard times when the cards had to be shuffled. In all work it is easy to experience the sense of ownership and the aspirations of the designers. But the ringmaster is always present, especially in public spaces where he does not dictate how to use them but provides the tools to enable the possibilities of encounter.

In memoriam:
Marco Frascari (1945-2013)

Marco Frascari was born in Mantova to the sounds of war and in the shadow of the dome of Alberti's Sant'Andrea, on 29 March 1945. He graduated from the *I.U.A.V* in 1969, where his most significant teacher and later employer was Carlo Scarpa. With his family, he moved to the USA where he pursued a MS in Architecture at the University of Cincinnati, followed by a PhD at the University of Pennsylvania. He became professor at the latter, then director of its doctoral programme, teaching there for almost two decades. He was visiting professor at Columbia, Georgia Tech and Harvard. In 2005, he left his position as Truman Ward Professor at Virginia Tech to become director of the Azrieli School of Architecture and Urbanism at Carlton University, Ottawa. His innumerable students all over the world remember him as one of the sincerest, most inspirational and generous of teachers.



"L'occhio" (the eye) from the serie piccolo
(with kind permission of Paola Frascari)



A prolific scholar, Marco wrote on architectural theory, history, representation and tectonics in most leading journals and, notably, in two books, *Monsters of Architecture* (1991) and *Eleven Exercises in the Art of Architectural Drawing: Slow-Food for the Architect's Imagination* (2011). He contributed "Gee Wizz" *to Interstices* 06 and "The Splendour and Miseries of Construction Drawings" to *Interstices* 11.

Marco was a lover of cats, above all, Herriman's *Krazy Kat* who often crept into his writing and drawings. Truly eclectic, he explored relations between architecture and such topics as food and divination (the tarot, the Cathars…). I once arrived at a library terminal at Penn he had just vacated to find an extraordinarily extensive list of searches on Carribean voodooism. His favourite preoccupations were dream, magic, storytelling and imagination. He excelled in aphorisms. One guiding thread in his thinking was the embodied wisdom of the ancient Italians, which he set before the rationalism of the Greeks, Cartesians and Neo-Greeks. He explored the split between science and skill, a creation of Plato's, in some of his finest papers. Not without a tinge of melancholia, he conceived architecture not only as a form of making (*poièsis*) but also of world-making (*cosmopoièsis).* A voracious reader endowed with a remarkable memory, Marco always crossed historical knowledge with a sense of the fantastic, and critique with irony, creativity and enchantment.

In 2009, we invited Marco as a Distinguished Visitor of The University of Auckland and keynote speaker for the *Interstices Under Construction* symposium "The Traction of Drawing". It was wonderful for me to watch my former PhD advisor mixing with my colleagues. During his stay, he aroused our imagination and won our hearts.

Ross Jenner

Contributors to this issue

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is Emeritus Professor of Philosophy at Darmstadt Technical University, Germany. He has risen to prominence through his work in aesthetics, the philosophy of embodiment and technology, and practical philosophy. In architecture, art and design, his works are increasingly referenced by Peter Zumthor, Herzog and De Meuron, Olafur Eliasson, James Turrell, de Costard and Rahm, Juhani Paallasmaa and Bruno Latour. His concept of "atmosphere", as the primary aesthetic reality, is particularly relevant to architecture. Related to moods and their spatial carriers, it is the common sphere between a building or a work of art and the beholders' perception, their bodily presence. An extended biography can be accessed at http://interstices.ac.nz/call-for-paperspresentations/

Marshall Cook

Marshall Cook is a founding director of Cook, Sargisson & Pirie since 2000 (previously, from 1968, Cook, Hitchcock & Sargisson). He is a fellow of the NZIA, a recipient of the President's Award and a NZIA Gold Medallist. Since graduating in 1968, he has worked within New Zealand and internationally as a consultant design architect and urban planner. His design work spans resorts, housing, commercial and urban developments. He is the recipient of numerous architectural awards and is Adjunct Professor at Unitec.

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architect and architectural historian, is Professor of Architecture and Visual Theory and Director of the MPhil/PhD Architectural Design programme at the Bartlett School of Architecture, University College London. Jonathan is the author of *The Illegal Architect* (1998), *Actions of Architecture* (2003), *Drawing Research* (2006), *Immaterial Architecture* (2006) and *Weather Architecture* (2012), editor of *Occupying Architecture* (1998), *Architecture—the Subject is Matter* (2001) and *Research by Design* (2003), and co-editor of *Critical Architecture* (2007) and *Pattern* (2007). He is also a commissioning editor of the Ashgate 'Design Research in Architecture' book series. Venues for solo exhibitions have included the Haus der Architektur, Graz (1997), Architektur-Galerie am Weissenhof, Stuttgart (1998) and the Matthew Gallery, University of Edinburgh (1999). His research has been translated into Catalan, Chinese, Czech, Danish, French, German, Greek, Japanese, Korean, Portuguese, Spanish and Swedish. Hill has presented 13 international keynotes and over 100 international lectures, including in Australia, Austria, Denmark, Canada, Cyprus, Finland, Germany, Greece, Hong Kong, Ireland, Israel, Italy, Korea, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Taiwan and the USA.

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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 and 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*.

Felipe Lanuza Rilling

is an architect trained at the University of Chile (2004) and obtained his Master in Architecture at the Catholic University of Chile (2008). His teaching and his research interests are situated in the areas of architectural and urban design, history and theory. Through his investigations into the notion of absence in urban leftovers, he explores processes of design and representation as a way of prompting new understandings and alternative interventions in the built environment. Since 2011, Felipe has studied these subjects at the Bartlett School of Architecture, University College London, where he is pursuing a PhD in Architectural Design.

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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 Städelschule Architecture Class under Peter Cook, at the University of Applied Science, Stuttgart and The Bartlett, University College London. Ludwig held a fellowship at the Akademie Schloss Solitude in Stuttgart and 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.

Abigail McEwen

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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.

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Guidelines for submissions

All submissions should engage in, and contribute to, a wider critical context, as well as clearly position the work within the current field of knowledge in architecture, art, design and other related fields. They need to be pertinent to the theme of the issue, demonstrate a critical engagement with current debates and an understanding of the body of knowledge underpinning them, have an appropriate structure, and be accessible to the readers of *Interstices: Journal of Architecture and Related Arts*.

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Submission

All submissions must be accompanied by a short abstract (100-150 words) and a biographical note (80-100 words) on a separate page. The inclusion of a contact email address in the bionote is optional.

Please submit manuscripts in the form in which you wish them to appear. The Interstices formatting principally follows APA6th formatting. Detailed formatting instructions and examples are available at http://interstices.ac.nz/information-for-contributors/guidelines-for-submissions/. Only contributions formatted according to these guidelines will be accepted for publication.

Refereed written papers should not exceed 5000 words (including title, main text and endnotes). Non-refereed full papers should not exceed 2500 and reviews should not exceed 1000 words. Longer papers are only accepted in special circumstances.

Refereed visual submissions should make evident their mode of fabrication, and its exploration and questioning, both in the visual and textual parts of the submission, and their relationship with sites and empirical or conceptual contexts must be articulated and made explicit. The work needs to demonstrate innovation or creative excellence. It must articulate, in both graphic and textual form, the theoretical underpinnings, design process and reflective evaluation of the outcome. Images need to be supplied as high-quality jpg files, at approximately 150% of the anticipated size. The accompanying text (approx. 500 words) needs to carefully describe media and processes used and succinctly explain context and intention. It needs to reference precedents which attempted the same or in any other way impacted on the conception of the work submitted. This part should be footnoted using (an adaptation of) the APA Style. Refereed visual contributions will be allocated approximately 10 A4 pages, non-refereed contributions approximately six pages.

Interstices is published in black-and-white and this should be taken into account when selecting images for reproduction. In all cases, the relationship between text and visual work needs to be carefully considered and articulated.

To facilitate blind reviewing, no references to the author/s, the institution, department or firm or any other form of identification may be included in the paper itself. Papers that include identification will not be reviewed. Author name and details must be supplied in the email itself (name of paper, contact details in full, and word length of paper) and the file must be in Microsoft Word format.

Refereeing process

All submissions are reviewed first by a selection committee. If considered suitable, they are then sent to two referees (blind reviewers) who will return a referee report with advice regarding suitability for publication, editing, reworking or development of the paper. The recommendations will be summarised by the issue editors and forwarded to the writers, with the expectation that the referees' comments will be addressed before the paper is edited for publication. Should the reports diverge, the issue editors may direct the author. Conversely, if authors are in doubt about a report's implications, they are most welcome to seek clarification with the issue editors.

Publication

When a paper is accepted for publication, the author(s) will be asked to forward it electronically with the following file name: *Interstices* (issue number)_author name_final.doc. The editors reserve the right to make amendments, alterations or deletions to papers without consulting the author(s) so long as such changes do not affect the substance of the article. Usually, however, the authors will be consulted about changes.

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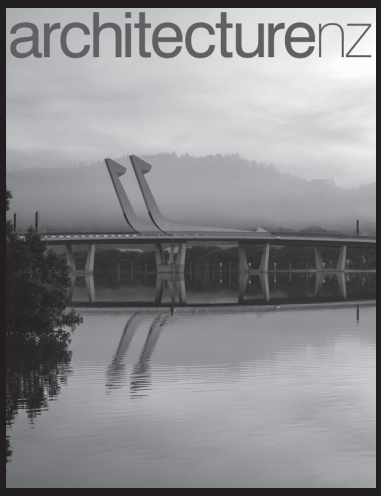

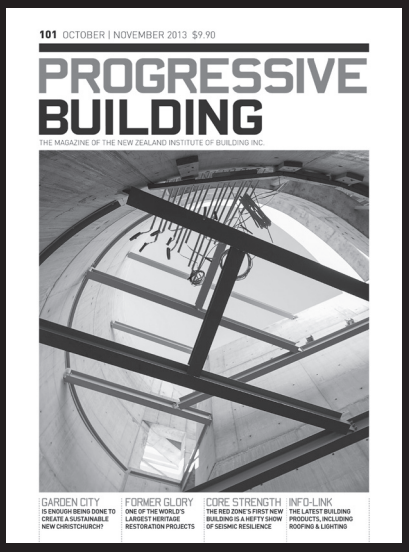

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