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Citation for published version:
Ross, L 2008, 'An Excess of Unthinking Material: The Tectonic of Flow in Zaha Hadid's recent work' Paper presented at Tectonics: Making Meaning, Eindhoven, United Kingdom, 8/03/06 - 8/03/06, .

Link:
Link to publication record in Edinburgh Research Explorer

Document Version:
Other version

Publisher Rights Statement:
© Ross, L. (2008). An Excess of Unthinking Material: The Tectonic of Flow in Zaha Hadid's recent work. Paper presented at Tectonics: Making Meaning, Eindhoven, United Kingdom.

OPEN ACCESS

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Tectonics: Making Meaning Conference
Abstract No. 113

An Excess of Unthinking Material: The Tectonic of Flow in Zaha Hadid's recent work

Introduction: Future Goo.

Nanotechnology offers the future a new nightmare scenario, known as 'Grey Goo[i]'. The future is going to be easy; all the laborious work will be done at the molecular level by tiny Nano-robots. These robots will be invisible, fully automated, and self-replicating; we'll be free to ignore them as they maintain and improve even our own bodies. But what if these robots get carried away, and perform their tiny duties with uncontrollable zeal? Our existing varied molecular structures could be eroded, reduced to more convenient common denominators. We could wake up to find the rich variety of life on earth homogenised, blended into a kind of post-mordial soup, or 'Grey Goo'.

Returning to the present, and zooming out to the scale of our built environment, are we not already faced with the long dawn of this scenario? Two contemporary tendencies suggest as much. On the one hand, the building industry is becoming increasingly automated. Like the robots to come, our existing techniques of automation - the combined efforts of lean manufacturing, legislative bodies and globalised finance vehicles - threaten to erode the familiar variety and specificity of life on earth. Our towns and cities are increasingly reduced to the 'Junkspace' of sub-urban sprawl, business parks and shopping centres, which appear on brink of coalescing into a single sprawling multi-function complex[ii]. On the other hand, a new language of architectural design is developing, pre-dominantly in British and American universities, which *looks* distinctly gooey. This work - perhaps best represented in Europe by Zaha Hadid and Patrick Schumacher's practice - is also interested in a technological imperative, but its built form is quite different to the gawky accidents of industry. The work is typified by fluid formalities, which often seem

suggestive of magnified molecular structures. To what degree should we be concerned that Hadid's recent work is a further step further toward, or sinking in, to the future goo?

Flow is a useful concept that connects these industrial and architectural tendencies, and explains a contemporary enjoyment of automated design procedures. The products of Lean construction *flow* from demand, maximising efficiency by minimising surplus; The rafts of legislation that control this production *flow* from policy; perhaps even we consumers '*go with the flow*'? In industry, fluidity is a byword for efficiency, a submission to the mechanical laws of production. This fluidity could also be also revelatory, revealing for instance the value of the product, the truth of the policy, the will of the crowd.

The flow of industry could be threatening to the architect, though; If the design of buildings can be determined automatically, couldn't the profession be out-sourced to robots? However, It is precisely such automated procedures that excite the new architecture. For example, analysis of human movement can predict crime and spending patterns and inform spatial proposals by these parameters; parametric modelling systems can then generate form from this data; CAD – CAM software can then control the computer-numeric manufacture of these forms. Again, this automation could be revelatory, which, in the tradition of architecture, has a particular significance. The new architecture claims to 'suspend aesthetic and moral prejudice', in a 'spirit of ruthless modernization'; no longer concerned with the old codes of re-presentation, architecture can reduce itself to be nothing but the *presentation* of its organising principles, to be nothing but a diagram.[iii] The new designers are capable of suppressing their preconceptions and '*get in the flow*' of production; they keep architecture in a job by downsizing it, making representation redundant.

This all sounds pretty gooey; like a further yoking of humanity to a technological imperative. Certainly Hadid's practice hopes to be as programmatically innovative as it is formally, and makes claims to a socially progressive concern. Often referring to Marx in this texts, Schumacher insists for instance, that in today's political climate – which he sees

as lacking any popular progressive dimension - a full commitment to technology is the only emancipatory project going. ^{iv}

This paper considers the relation between these industrial and architectural tendencies, looking closely at the tectonic, *the making that is revealing*, of Hadid and Schumacher's recent work. It will consider the way in which concepts of flow organise the use of automated processes in both industrial and architectural practice. It will conclude that Hadid's recent practice is, in fact, not the true goo, but will suggest an alternative relation between her practice and its industrial context: Hadid's recent work is a fantasy compliment to the traumatic fact of today's building industry, which hopes to control the threat posed to the traditional role of the architect.

Tectonics of Flow

In the industrial context, its easy to see what is revealed by automated processes, and what this has to do with a concept of flow. The shape of a typical aircraft window is a filleted rectangle. We know that the aircraft's structure is a monocoque. Studies of stress in the aircrafts skin show that force *flows* through this structure, as water through a vessel. Any puncture, such as a window, will interrupt this flow. If the window is rectilinear it will generate ripples, intensities of force at its corners, requiring a stronger skin; a curved form, however, will smooth the flow, and allow for a more efficient structure. We could say that the filleted design of an aircraft window displays a *tectonic of flow*, a making that is revealing of the fluid characteristics of the medium. Unlike Eero Saarinen's TWA terminal, for instance, aircraft design directly *presents* the dynamics of flight, rather than *representing* them.

Spatial analysis like those performed by the consultants Space Syntax discover the concept of flow to be effective in another medium. They make studies which measure the density of pedestrian movement at locations throughout cities, revealing for instance that

in gridded cities the greatest density is at the corners of rectilinear buildings. Again, a *tectonic of flow* - here in the form of a curvaceous plan - would smooth this flow, and directly present an organising principle of the medium. In their analysis of the Harrods department store, Space Syntax also cross-reference the flow of people with the flow of financial transactions, revealing the white-water and eddies of trade. They demonstrating that spending patterns, like human movement and structural forces, can be measured as flows.

Image of Flow

In the architectural context, however, its much more difficult to see what is revealed by fluid tectonics, or how they emerge from the design process. Much of Zaha Hadid's recent work employ the two techniques discussed above. The coffers of the Phaeno Science Centre's podium are filleted like the airplane window, improving the sections without generating excess local forces. The filleting to its overall form is such that the piers appear structurally continuous with the slab. The plan of the centre also displays a filleting of angles, a smoothing out of circulation routes; in fact it looks like the kind of department store Space Syntax might advocate. However, its hard to see how this has arisen from an organising principle of the program; have the museums curators insisted that the building blur the categorical logic of its display, and if so, how has this insistence been quantified, so as to drive the design process?

In The Opus, a proposed mixed-use development for Dubai, most of the floorplates are quite conventional, but a fluid tectonic does inform the signature 'urban window'. Although the form of the window displays the same filleting of angles, merging the array into a single seamless surface, again this form does not seem to be determined by any technical concern. In fact, unlike the industrial tectonic of flow - whose fluidity appears at moments of intense economic efficiency - here fluidity only occurs at moments of intense economic excess; lobbies, boardrooms and urban windows are the typical exemptions to corporate economy drives, locations in which excess has a clear value.

If not directly produced by automated techniques, the fluid language of Hadid's recent work is, however, often connected to automated design procedures. A clear example of this is provided by Schumacher's academic work with the AADRL. The inspiration for his 'Corporate Fields' programme is a study of the organising principles of contemporary business. Projects from the programme propose a literal spatialisation of these organisational principles, for example, using a client's ven-diagrams to determine the form of a building. The graphic icons are simply extruded, intersected and arranged as a series of volumes. We could hardly call this process revelatory - all it could reveal is the clients already existing ability to represent itself - but it is a means of automating design, and to some degree suppressing the architects semantic input. Strangely, though, the result of this simple process is obscured; a series of smoothing and deformation processes are finally applied to the extruded diagrams, making them unrecognisable in the resultant building proposal.[v]

Hadid and Schumacher's recent work, and much of that produced in today's academies, does not offer us a tectonic of flow, but an image; that is, its tectonic is determined by need to present an image. This image of flow is not revelatory, but representational; indeed it often seems to mask some other, underlying principle of organisation. The meaning of this image is clearly legible in the deformation processes of the 'Corporate Fields' project. These are also literal spatialisations, this time of terms which interest Schumacher and his client philosophically, terms such as superposition and matrix, multiple affiliation and network, smoothness and blur. These are deleuzian terms, descriptive terms from the theories of the unconscious. For the new architecture, *flow* appears as a desirous image, and image of desire.

Libido Flows

Freud's meta-psychology offers two privileged models of the unconscious, which he calls the topographic and the economic point of view[vi]: He suggests that the unconscious can be considered *topographically* because it is distributed in space, and that the libido - the

unconscious psychic excitement that occupies it - moves through this space subject to resistances, as water flows through a landscape. The unconscious can be considered *economically* because this flow of libido is subject to the economy of certain 'drives' that determine its movements, as gravity determines the movement of water. Like force, people and money, the libido flows.

For Freud, the libido's drive compels us to a reduced form of life, in some ways similar to the Grey Goo of the future.[vii] This *drive* explains the logic of the dice-player, the lover and the scientist; in the roll of a dice, in the throws of sexual climax, or in the abandon of scientific creation, humanity enjoys a reduction to an absolute fact of its existence. In psychoanalytic theory, this fact is the traumatic *Real*, the register of reality that resists our *Symbolic* or *Imaginary* attempts to represent it.[viii] The Real is at once all that in external reality beyond our linguistic control, as well as the buried psychological trauma that really motivates us.

If we consider Space Syntax's analysis of Harrods's from this vantage of psychoanalysis, it makes a compelling image of the unconscious and the flows of libido. The statistical analysis of the building-users movements blurs their individuality into a tendency, reducing the actual human-beings into a purely economic drive. The environment of the shop floor is also reduced, no longer having any sensory qualities. The building is, for space syntax, simply a landscape of varied resistance, and the improvements the study could suggests are limited to removing such physical 'repressions' on our spending.

Automated design processes, such as those advocated by Space Syntax are exciting for contemporary practice, not because of the banal specific truths that they reveal – that people are more likely to spend money in places they can get to easily - but because these truths appear as a glimpse of the Real, of the sublime extents of reality beyond our representational command. The Real is what contemporary practice hopes to glimpse when it suspends aesthetic and moral judgement. However, although industry is good at submitting to this Real, architectural practice is not. As we have seen Hadid and Schumacher's recent work does not abandons itself to the procedures it creates, but always maintains an aesthetic judgement; their practice is not determined by an

abandonment to automated procedures, but by a sophisticated aesthetic of abandonment.

Instead, their works attempts a failed short cut to the Real, by literally representing the verbal language of psychoanalysis, imaging the picturesque descriptions of its terms. For instance, Lacan's name for the libido is the Lamella, a conjunction of the French words for Omelette and Man. This Lamella is described as being a "*pure surface, without the density of a substance, an infinitely plastic object that can not only incessantly change its form, but can even transpose itself from one another medium…*".[ix] This egg-man, then, is not like the Spanish tortilla; thick and packed with nutritious fillings. Lacan's omelette man, like the new architecture of flow, is very French; as thin as possible, insubstantial, and gooey. References to psychoanalytic theory are ubiquitous today in academic architecture, as are projects for a landscapes composed of a single seamless surface, because the latter is a literal representation of the former.

Ridley Scot's film 'Alien' presents a fantasy scheme which seems haunts this aesthetic, helping in its translation from word to image. The subject of HR Giger's alien is again a life-form reduced to pure libido, to the pure insistence of a species, an organism even more perfectly evolved than the average Harrods shopper. The alien's environment is also infinitely plastic and able to incessantly change its form, in this case being literally secreted from it.[x] The alien subject and its environment, Hadid and Schumacher's recent work, exhibit the same conceptual and formal traits as Lacan's picturesque description of the libido, again because the latter are literal representations of the former.

To reiterate: sometime the design of Hadid and Schumacher's recent work does seem determined by an economic concern, as though the requirements of the building user have been reduced to a quantifiable drive. Sometimes it does seem determined by an automated process such as data-scaping, parametric modelling, or CAD-CAM softwares, whereby the *designer* appears reduced to a pure drive. However, its abandonment to these concerns is gestural, part of a calculated aesthetic of abandon. Unlike its industrial counterpart, and counter to its claims, it does not immediately present its organising principles, or suspend aesthetic and moral prejudice. Rather, it consistently presents an image of flow, a literal spatialisation of the picturesque descriptions of the unconscious,

which it achieves by replacing or masking the conventional language of building - that of floors, walls, doors etc - with a landscape of graded resistances, realised through a single seamless surface.

An Excess of Unthinking Material

Of course, its not difficult to spot the libido in Hadid's work; the wonderful extravagance of production, the consistent technological innovations, and her own personality, are all highly virile. But this eroticism is also materially realised in the built works tectonic. The linings of a luxury hotel room, for instance, are formed from a single seamless surface, the wall folding out to form the bed and side table. Like the fetishist's PVC suit, this lining disarticulates the functional members of the room, stretching between them in a luscious blur. In doing so, It creates the typical erogenous zones - crotches, clefts and clavicles – excesses of material that are neither one thing nor the next. Neither functional, nor positively designed, these excesses of unthinking material are the material realisation of the projects conceptual abandon, it most enjoyable moments, its jouissance[xi]. In this example, a hotel in Madrid, the tectonic is quite theatrical, an exquisite façade is used to hide more conventional construction below. Indeed this project is a diorama, an interior fit-out for a hotel offering celebrity themed rooms. But the tectonic is not accidental, the result of a technology deficit. The meaning of the work - the reduction of the environment to a single seamless surface - is dependent on this masking of the immanent tectonics of construction.

The aqua table, by contrast, is much more voluptuous. No masking is required as the table is a solid cast of silicone gel and polyurethane. At first glance this appears to mark a radically different, more substantial tectonic. However, looking closer isn't the same logic at work? The materials used begins as a liquid, submitting to gravity and to the form of the vessel, before curing solid; but the material is then machined, via computer numeric control, into an image of liquid. Tectonically, the exciting thing about the tables is that an image of liquid is projected onto an actual liquid, the immanent qualities of the substance

are mastered by a digital image of itself.

Conclusion: Dreaming the desire of technology.

Fortunately, although Hadid and Schumacher's work does herald a sexy, easy future, it does not mark the final, terrifying sink into Goo. As we have seen, their practice does not surrender aesthetic control to the erotic of chance; rather, their chancey gestures are part of a controlled aesthetic of the erotic. The contemporary building industry is the traumatic *Real*, to which - via the image - Hadid's recent work presents a fantasy scheme, a scheme that protects the traditional role of the architect. Firstly, the image *looks* very technological - it wears a convincing disguise of technocracy; consequently we can imagine that a QS would find it challenging to value-engineer a Hadid. Secondly, the image is one of excess, an excess around which technocracy can arrange its economy - an occasional Hadid justifies economising elsewhere. Finally, the image is complex and sophisticated, it requires highly trained architects to realise it; perhaps the real material value of Hadid's technological innovations is simply to keep the coming generation of architects in work?

This opens up a possible criticism, however. If the architecture of flow is not the immediate presentation of the organising principles of force, money and desire; that is, if the image of flow is always just a representation of the desirous in force and money, this forecloses our moral and aesthetic judgements, rather than opening them up. Does flow deserve to be the ubiquitous image it is becoming? Since this image appears to require luxury car showrooms, international corporate lobbies, and exclusive hotel bedrooms to realise it, doesn't this image threaten to radically limited the scope of practice? Despite Schumacher's frequent academic appeals to Marx, Hadid remains an architect of innovatively alienating environments, and although Hadid and Schumacher's recent work does not directly realise a terrifying future of technocracy, it does insist that we dream the desire of it.

Notes

i

Grey Goo is a hypothetical scenario, in which the earth is gradually replaced by replicating nano-robots. Its name is not meant to be taken literally:
> "Though masses of uncontrolled replicators need not be grey or gooey, the term "grey goo" emphasizes that replicators able to obliterate life might be less inspiring than a single species of crabgrass. They might be "superior" in an evolutionary sense, but this need not make them valuable".

Eric Drexler, *Engines of creation*, Oxford, Oxford University Press, 1986, chapter 11.

ii

The Marxist critic Frederick Jameson comments on Koolhaas' essay 'Junkspace', noting that the city he describes appears on the "on the point of fusing into a kind of all purpose indeterminate magma". He continues:
> "it is the end of the world that is in question here… its slippage into what [Phillip K.] Dick called kipple or gubble, what [Ursula K] LeGuin once described as the buildings 'melting. They were getting soggy and shaky, like jello left out in the sun. The corners had already run down the sides, leaving great creamy smears.' Someone once said that it is easier to imagine the end of the world than to imagine the end of capitalism. We can now revise that and witness the attempt to imagine capitalism by way of imagining the end of the world."

Frederick Jameson, *Future City*, New Left Review 21, Verso, May-June 2003, pp. 73-76

iii

Schumacher describes data-scaping experiments at the AADRL as "design engines" in "the spirit of ruthless modernization", he continues:
> "the polemic and ideological importance of the data-scape approach rests in the rebuttal of purely aesthetically driven discourses (such as minimalism). The reaffirmed 'functionalism' of data-scaping starts with the rejection of poetic sensibility and artistic intuition as points of departure for architectural and urban design. 'Design' looses all its connotations of style, taste, compositional delicacy etc. It becomes a creative force precisely as it temporarily suspends aesthetic and moral prejudice in order to experiment with and elaborate new and forward looking aesthetic and moral sensibilities in tune with contemporary performance criteria (e.g. allowing for a new and unseen degree of massivity). But rather than abandoning all pretensions toward the aesthetic realm data-scaping pursuits the conscious subjection of its evolution to the dynamic criterion of performativity."

Patrik Schumacher, *The Dialectic of the Pragmatic and the Aesthetic: remarks on the aesthetics of datascapes*, 1997, http://www.patrikschumacher.com

iv

> "The left wing organisational paradigms (e.g. the rhizome), which Deleuze & Guattari elaborated in the late seventies, in dialogue with the new left forms of revolutionary struggle and organisation, seem to become the very paradigms of corporate restructuring: Deleuzian deterritorialisation is dissolving the rigid departmentalisation (=territorialisation) of competencies and the aborescent pyramid of classical corporatism is mutating towards the rhysomatic plateau upon which the leadership is distributed in a permanently shifting multiplicity where every point bears the latency of becoming a temporary centre."

Although Patrik recognises that "the new flexibility and richness of work is experienced as existential insecurity" and that "while management gurus proclaim the 'revolution' and talk about 'liberation management' etc., in reality these tendencies remain compromised and limited by the strictures of class-society, maintaining hierarchy and hinging authority upon property", he concludes that "Nevertheless, today there is no better site for a progressive and forward-looking project than the most competitive contemporary business."

Patrik Schumacher, *Spatializing the complexities of contemporary business organisation*,
http://www.patrikschumacher.com

v

Patrik describes the process noting that:
> " The move from 2D to 3D, from intersecting circles to interpenetrating spheres has the further advantage of allowing for the articulation of a more complex pattern of overlap than can be managed within a two dimensional plane. At an even higher level of complexity the diagram might have to resort to deformed 3-D blobs to avoid accidental / unintended intersection."

Patrik Schumacher, *Robotic Fields: Spatializing the dynamics of corporate organisation*, in Designing for a Digital World, edited by Neil Leach, London, RIBA, 2001, http://www.patrikschumacher.com

vi

> "With the first, or *topographical*, hypothesis is bound up that of a topographical separation of the systems [unconsciousness] and [consciousness] and also the possibility that an idea may exist simultaneously in two places in the mental apparatus - indeed that if it is not prohibited by censorship, it regularly advances from one position to the other, possibly without losing its first location or registration." Besides this hypothesis, "we have adopted the *economic* one. This endeavours to follow out the vicissitudes of amounts of excitation [libido] and to arrive at least at some relative estimate of their magnitude."

Sigmund Freud, *The Unconscious*, from *Volume 11: On Metapsychology*, London, Penguin, 1991, pp 177-184

vii

> "This blind indestructible insistence of the libido is what Freud called 'death drive', and one should bear in mind that 'death drive' is, paradoxically, the Freudian name for its very opposite, for the way immortality appears within psychoanalysis: for an uncanny excess of life, for an 'undead' urge which persists beyond the (biological) cycle of life and death, of generation and corruption. This is why Freud equates death drive with the so-called 'compulsion-to-repeat', an uncanny urge to repeat painful past experiences which seem to outgrow the natural limitations of the organism affected by it and insist even beyond the organism's death - again like the living dead in a horror film who just go on.". We could consider the appropriation of automated procedures in contemporary architectural practice as such a compulsion-to-repeat, an repetition and representation of the traumatic fact of industry.

Slavoj Zizek, *Troubles with the Real: Lacan as a viewer of Alien*, http://www.lacan.com/zizalien.htm

viii

The terms Imaginary, Symbolic and Real are used here in their Lacanian sense. From the translator's notes, Ecrits:
> "The imaginary was then the world, the register, the dimension of images, conscious or unconscious, perceived or imagined". "The notion of the 'symbolic' came to the forefront in the Rome Report. The symbols referred to here are not icons, stylized figurations, but signifiers, in the sense developed by Saussure and Jakobson, extended into a generalized definition: differential elements, in themselves without meaning, which acquire value only in their mutual relations, and forming a closed order – the question is whether this order is or is not complete". " The 'real' emerges as a third term, linked to the symbolic and the imaginary: it stands for what is neither symbolic not imaginary, and remains foreclosed from the analytic experience, which is an experience of speech. What is prior to the assumption of the symbolic, the real in its 'raw' state (in the case of the subject for instance, the organism and its biological needs), may only be supposed, it is an algebraic x. This Lacanian concept of the 'real' should not be confused with reality, which is perfectly knowable: the subject of desire knows no more than that, since for it reality is entirely phantasmatic. The term 'real'… began naturally enough, by presenting, in relation

to symbolic substitutions and imaginary variations, a function of constancy: 'the real is that which always returns to the same place'. It then became that before which the imaginary faltered, that over which the symbolic stumbles, that which is refractory, resistant. Hence the formula: 'the real is the impossible'. It is in this sense that the term begins to appear regularly, as an adjective, to describe that which is lacking in the symbolic order, the ineliminable residue of all articulation, the foreclosed element, which may be approached, but never grasped: the umbilical cord of the symbolic."

Jaques Lacan, *Ecrits*, London, Tavistock, 1977, pp. ix-x.

ix

Zizek, *Troubles with the Real: Lacan as a viewer of Alien*.

x

Lacan's Lamella sounds strikingly similar to Ridley Scot's 'Alien', Lacan himself suggesting that "it comes and envelopes your face while you are quietly asleep..." (The Seminar, Book XI, The Four Fundamental Concepts of Psychoanalysis, p. 197-198). Zizek continues:

"The monstrous "alien" in the film so closely resembles Lacan's lamella that it cannot but evoke the impression that Lacan somehow saw the film before it was even made. Everything Lacan talks about is there: the monster appears indestructible; if one cuts it into pieces, it merely multiplies; it is something extra-flat that all of a sudden flies off and envelops your face; with infinite plasticity, it can morph itself into a multitude of shapes; in it, pure evil animality overlaps with machinic blind insistence. The "alien" is effectively libido as pure life, indestructible and immortal".

Slavoj Zizek, *Troubles with the Real: Lacan as a viewer of Alien*, http://www.lacan.com/zizalien.htm

xi

The word Jouissance is used here as a Lacanian term. From the translator's notes, *Ecrits*:

"There is no adequate translation of this word in English. 'Enjoyment' conveys the sense, contained in jouissance, of the enjoyment of rights, of property, etc. Unfortunately, in modern English, the word has lost the sexual connotation it still retains in French (jouir is slang for 'to come'.). 'Pleasure', on the other hand, is pre-empted by plaisir – and Lacan used the two terms differently. 'Pleasure' obeys the law of homeostasis that Freud evokes in 'Beyond the Pleasure Principle', whereby, through discharge, the psyche seeks the lowest possible level of tension. 'Jouissance' transgresses this law and, in that respect, it is beyond the pleasure principle."

Lacan, *Ecrits*, pp. x.