

The Politics of the Envelope

A Political Critique of Materialism

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Before delving into the argument, I should probably admit a personal aversion to political ideology that goes beyond its application to architecture and which probably has a biographical origin. My experience of Spain's transition to democracy has left me with a rather cynical view of political ideology as an effective tool for understanding or transforming reality. I was born in a dictatorship and I remember having to learn to vote at school as one of the new protocols of the new democracy. As a left-leaning adolescent, I remember longing for the Western powers to intervene against Franco's dictatorship, an episode that came back to haunt me thirty years later when pondering Western intervention in Iraq, in a far worst dictatorship and in a far more globalized world. In Spain I first witnessed Javier Solana, then Spanish Minister of Culture under the Socialist Government, campaigning for Spanish integration into NATO. Then came the termination of compulsory military service by Aznar's right-wing government, with the Socialist Party in opposition, which reinforced my doubts about political ideologies. On the other hand, I had witnessed the subversive effects of foreign tourism on sexual behavior during Franco's strictly Catholic era and the impact of low interest rates, home ownership and massive infrastructure construction on social mobility. The demise of the Aznar government, brought down by text-messaging, convinced me of the deeply transformative political potentials of seemingly neutral technological and economic processes.

It is precisely in the most pragmatic, concrete operations where contemporary politics are to be found.¹ The current American presidential campaign proves that within contemporary politics, an all-encompassing mass politics focused on class, gender, race, creed and identity and built upon partisan ideologies is less effective than more nimble molecular politics capable of engaging swing voters. Within the contemporary processes of the built environment, where an increasingly complex interaction between different agents takes place, ideological politics often become an obstacle to urban development.

The discipline has been split between those who believe architecture is a mere social construct and those who believe that architecture's facts are determined by the inexorable laws of physics, economics, buildability, climatology and ergonomics. Recent attempts to shift the grounds of the architectural debate away from technology and production toward political critique and ideology are rightly aiming to recover some political ground that has been missing for some time within the discipline. However, they haven't succeeded in coupling political genealogies or ideologies with disciplinary traits, and therefore have been unable to produce effective political strategies in architecture, let alone new architectural possibilities. The attempts to politicize architecture have emerged from the hypothesis that architecture is a 'social construct', a cultural fabrication and an embodiment of political concepts, disassociated from an architecture governed by natural laws, statics and climatic demands.

But architecture is as much a physical construct as it is a social or political one and to understand architecture as a mere representation of the political is as problematic as to declare architecture entirely ruled by natural laws. In order to enable a viable strand of architectural politics, we need to politicize the discipline as the mediator between humans and non-humans, culture and technology and as the mechanism that will enable us to produce problematized *matters of concern: Things* rather than *Objects*.²

This text is an attempt to initiate an effective link between architectural technologies and politics and to advance a new political critique of architecture capable of addressing the challenges posed by globalization by incorporating political content to architectural entities.

- 1 'The conflict over the basic terms of social life, having fled from the ancient arenas of politics and philosophy, lives under disguise and under constraint in the narrower and more arcane debates of the specialized professions. There we must find this conflict, and bring it back, transformed, to the larger life of society'. Roberto Mangabeira Unger, *What Should Legal Analysis Become* (New York: Verso, 1996).
- 2 Following the description proposed by Bruno Latour in *Politics of Nature: How to Bring the Sciences Into Democracy* (Cambridge, MA: Harvard University Press, 2004). Latour retrieves the Heideggerian notion of *Ding* ('thing' in German) to coin the neologism *Ding-politik* as an alternative to *Realpolitik*. In the Latourian conception *thing* is an assemblage between humans and non-humans, politics and nature as well as concerns and facts that is neither merely a natural object nor a socially constructed one, but an assemblage of both, the object and its attachments.

The Powers of Architecture

During the last two decades we have witnessed a substantial reformulation of the political stance of architectural practice *vis-à-vis* the development of global capitalism. As a result of new conditions through which cities and architecture are produced, the politics of architectural practice have changed, but their impact on the discipline has not yet been fully theorized. The increasing complexity of global developments – the distribution of power within the world economy, the transnational competition between cities, the development of world-wide environmental policies, the growing importance of media as a political force, the increasing presence of private agents in the provision of services and infrastructures – are redefining the politics of architecture and urbanism. Multiple and ubiquitous communication technologies have eroded the power of dialectics and discourse as a political instruments, while the rising profile of city governance relative to national politics and the surge in violence and military activities as a contemporary form of geopolitics are indexes of a *physicalization* of the political.

Despite having become a crucial political battleground, architecture and urbanism appear to be unable to find a role within this new politics. Architects' traditional role as visionaries and ideologists has become redundant as the sheer speed of changes overtakes architects' capacity to represent politics ideologically. Within a reality far more complex and multi-faceted than any visionary formulation, an ideological position devoid of a close link to actualization and corporeality will remain disempowered. *Paper architecture* has lost its effectiveness as a political vehicle; like *utopia*, it is restricted to pure representation without the attachments and frictions capable of politicizing matters. In order to guarantee a minimum level of agency, architects need today to engineer their acquisition strategies, procurement routes, etc. to sustain a certain level of research. And those decisions become an integral part of the project.

Within this context it is vital to produce an updated politics of architecture in which the discipline is not merely reduced to a representation of ideal political concepts, but conceived as an effective tool to produce change. Rather than returning to ideology and utopia (as some critical theorists are proposing) a contemporary politicization of architecture needs to relocate politics within specific disciplinary domains – not as a representation of an ideal concept of the political but as a political effect specific to the discipline.³

The building envelope is possibly the oldest and most primitive architectural element.⁴ It materializes the separation of the inside and outside, natural and artificial and it demarcates private property and land ownership (one the most primitive political acts).⁵ When it becomes a façade, the envelope operates also as a representational device in addition to its crucial environmental and territorial roles. The building envelope forms the border, the frontier, the edge, the enclosure and the joint: it is loaded with political content. We have focused on the envelope as an optimal domain to explore the politicization of architecture and, possibly, the development of a *Dingpolitik*.⁶ A political critique of the envelope will hopefully help us to reconstruct the discipline as an effective link between material organizations and politics.

Despite the envelope's original role, the political performances of architecture have conventionally been located in the plan or the section, even if the protection from the elements and the securing of a physical domain were the primary reason for building. The plan of the building organizes the political structure and protocols hosted within it, while the section organizes the social strata and its relationships with the ground. For example, centralized or symmetrical plans have been thought to contribute to the stability and hierarchy of political structures, while distributed, clustered or labyrinthine plans are supposed to preserve the independence of localities from a central, panoptic structure. The traditional differentiation between the attic, the basement and the *piano nobile*, as well as the modernist homogenization of the section through the use of *pilotis* and *plan libre* are some of the political effects that have been available to buildings to date. In the past, the envelope has never had this capacity to directly effect and structure communities and has been traditionally relegated to a mere 'representational' or 'symbolic' function. The reasons for such a restricted political agency may lie in the understanding of the envelope as a *surface*, rather than as a combined effect of the construction technology of the building's skin and the specificities of its massing.

The choice of the building envelope as an object of research aims to thicken the range of attachments of the *surface*, a field of research that has recently returned to the architectural debate with unexpected strength, albeit within a rather isolated scope. The envelope exceeds the surface by incorporating a much wider set of attachments within the issues of construction and representation that converge in the design of the physical limit of a building. It includes the crust of space affected

3 This was a condition already announced by Tafuri: 'From the criticism of ideology it is necessary to pass on to the analysis of techniques of programming and of the ways in which these techniques affect the vital relationships of production. For those anxiously seeking an operative criticism, I can only respond with an invitation to transform themselves into analysts of some precisely defined economic sector, each with an eye fixed on bringing together capitalists development and the processes of reorganisation and consolidation of the working class'. Manfredo Tafuri, *Architecture and Utopia: Design and Capitalist Development* (Cambridge, MA: MIT Press, 1979), xi.

4 '...the beginning of building coincides with the beginning of textiles. ...The wall is the structural element that formally represents and makes visible the enclosed space as such, absolutely, as it were, without reference to secondary concepts. We might recognize the pen, bound together from sticks and branches, and the interwoven fence as the earliest vertical spatial enclosure that man invented. ... Weaving the fence led to weaving movable walls. ... Using wickerwork for setting apart one's property and for floor mats and protection against heat and cold far preceded making even the roughest masonry. Wickerwork was the original motif of the wall. It retained this primary significance, actually or ideally, when the light hurdles and matings were transformed into brick or stone walls. The essence of the wall was wickerwork'. Gottfried Semper, 'The Textile Art' in *Style in the Technical and Tectonic Arts: or, Practical Aesthetics* (Los Angeles: Getty Trust Publications, 2004).

5 Aristotle mentions the management of property as one of the primary reasons for the need of a political organization of human communities. The binding of goods and physical domains to the community or the individual is at the root of power structures and political behavior. Legislation and constitutions are very much based on the structuring of property over material goods. In one of the first known expositions of *Tragedy of the Commons* Aristotle wrote, 'that which is common to the greatest number has the least care bestowed upon it. Everyone thinks chiefly of his own, hardly at all of the common interest; and only when he is himself concerned as an individual'. In addition, he says when property is common there are natural problems that arise due to differences in labor: 'If they do not share equally enjoyments and toils, those who labor much and get little will necessarily complain of those who labor little and receive or consume much. But

by the physical construction of the surface, by the scale and dimension of the space contained, by its permeability to daylight and ventilation and by its insulation values and solar-shading capacities. It also involves the space that surrounds the object, its orientation in respect to sun, wind, views, etc. This includes its capacity to *re-present*, not in the sense to which the architectural critique has accustomed us, but in the ancient political role that articulates the relationships between *humans* and *non-humans* in a common world.⁷ The envelope is the surface and its *attachments*.

The envelope is a core concern of the discipline affecting materiality and construction, environmental performance, energy efficiency and other issues, but it also engages several political forms: economical, social and psychological. Yet there is no such a thing as a *unitary theory of the building envelope* in the history of architecture. Previous theories of the building envelope have addressed either problems of representation and composition or construction technologies. Semper's analysis of cladding materials and Durand's proposals for an adequate expression of the different typologies are examples of these partial approaches. The Loosian ornamental crime and the modernist abstracted 'whitewash' of the façade are other episodes that relate the design of the envelope to what happens behind. Colin Rowe's aesthetic critique on 'Character and Composition' and 'Literal and Phenomenal Transparency'⁸ insists on similarly compositional issues concerning transparency. Venturi's theory of the decorative and the representational are also precedents to this discussion, and of course there is a large body of knowledge addressing the environmental and structural performance of envelopes: Fuller, Le Ricolais, Banham...

Like the skin of a living creature, the envelope is the primary actor in the complex process of maintaining *homeostasis* in the building.⁹ In human life, however, the closed circle of *homeostasis* is opened up by psychological, political, social and cultural surpluses. The façade of a building functions not only on a purely biological level. It assembles the building's interior, which it protects, and the external public realm with which it communicates. The surface of the building has a kind of double existence intervening in two disparate worlds: the private inside and public outside. It is a boundary which does not merely register the pressure of the interior, but resists it, transforming its energy into something else. And vice versa. The envelope is the result of an act of violence on both spheres.

In the same way that artificial intelligence and genetic modification have become key political subjects, the building envelope is central to a political discussion of material practices. It is not by chance that we have become interested in the envelope at a time when energy and security concerns have replaced the earlier importance of circulation and flow as subjects that structure contemporary material practices. A *unitary theory of the building envelope* may be an answer to the decoupling of politics and nature and an opportunity to construct a hybrid world of *Things*, rather than political subjects and natural objects.¹⁰

Globalization has propelled a set of spatial typologies primarily determined by the capacity to conduct flow. Architects have tried to engage with this new borderless space, the 'space of flows',¹¹ by dissolving the envelope as an obstacle to flow and spatial continuity and presenting an image of the world as a chaotically flowing magma. However a new picture is emerging in the form of bubbles and foams, containers of a liquid reality. The proliferation of *bubble* buildings, *bubble* furniture and *bubble* objects in the last decade is difficult to explain as a simple coincidence: Foster's 30 St. Mary's Axe and London City Hall, Grimshaw's Eden Project, Future Systems' Selfridges and Lord's Media Centre, Herzog & de Meuron's Allianz Arena and Beijing Olympic Stadium, Paul Andreu's Beijing Opera – to name just a few very iconic buildings – demonstrate the powerful attraction of this aesthetic trend within the contemporary architectural *Zeitgeist*. The power of architecture is not just iconographic but also organizational. The lower envelope ratio that bubble buildings produce in respect to buildings of comparative volume is an index of the rarefaction of the exterior surface, perhaps as a result of increased security and energy concerns. These are social and political forces that have direct bearing upon the physical, material nature of the envelope.

Peter Sloterdijk described this new paradigm in his *Sphären Trilogy*¹² most eloquently. His powerful imagery evokes the world as a foamy space filled with bubbles and balloons of different scales and qualities. This *capsular* society and its phenomena such as *global provincialism*, the *politics of climatization* and the *social uteri* describe a new paradigm that requires not just a reconsideration of the technologies and economics of the building envelope, but of its political, social and psychological implications.

Another crucial factor in the renewed importance of the envelope as a central problem of contemporary architecture derives from the evolution of its production technologies. The rise of global capital markets and the transfer of urban power from

indeed there is always a difficulty in men living together and having all human relations in common, but especially in their having common property'. Aristotle, *Politics* 1261b34 (Oxford: Oxford University Press, 1999).

- 6 *Dingpolitik* is the term coined by Bruno Latour to address the politics resulting from the crisis of objectivity triggered by the collapse of modernity and the search for a new model of objectivity in which politics are one aspect of the object, its sciences and nature at large. See Bruno Latour and Peter Weibel's introduction to the exhibition catalogue *Making Things Public: Atmospheres of Democracy* (Cambridge, MA: MIT Press, 2005).
- 7 This borrows Bruno Latour's proposal for a political ecology capable of politicizing science without resorting to the idea of an entirely 'socially constructed' nature. Latour, *Politics of Nature*.
- 8 Colin Rowe, *The Mathematics of the Ideal Villa and Other Essays* (Cambridge, MA: MIT Press, 1982).
- 9 Jean-François Lyotard has applied this term to social 'power centers' he describes as being 'governed by a principle of homeostasis,' sometimes ignoring radical new discoveries or changes of environment because they destabilize previously-accepted norms or the status quo. See Lyotard, *The Postmodern Condition: A Report on Knowledge* (Minneapolis: University of Minnesota Press, 1984).
- 10 See Bruno Latour's critique in *Politics of Nature*.
- 11 Manuel Castells, *The Informational City: Information Technology, Economic Restructuring, and the Urban Regional Process* (Oxford: Blackwell, 1989).
- 12 Peter Sloterdijk, *ESFERAS I Burbujas. Microesferología. ESFERAS II Globos – Macroesferología. ESFERAS III. Espumas. Esferología plural* (Madrid: Ediciones Siruela, 2003, 2004 and 2006 respectively).

institutions to private agents have generated a global, market-driven building culture of predominantly private commissions, as even institutional clients are increasingly seeking private-public partnerships (PPPs) as a means of delivering and maintaining vital public infrastructure. While most other aspects of the architectural project are now in control of other agents (e.g. project managers, specialist contractors) that ensure the efficiency of the project delivery, the increasing facelessness of the client gives architects license to invent the building's interface. The envelope has become the last realm of architectural power, despite the discipline's inability to articulate a theoretical framework capable of structuring its renewed importance. Mobilizing a political critique of the envelope capable of addressing its multiple attachments and complexities may enable us to frame architecture not merely as a representation of the interests of a client, of a certain political ideology or an image of utopia, but as an all-too-real, concrete, and effective political agency able to assemble and mediate the interests of the multiplicities that converge on the architectural project. In order to realize these potentials we need to generate a definition of the discipline that remains attached to reality and yet resistant to consolidation. A discipline that rather than aiming at revolution as a political ambition, focuses on *explicitation*.¹³ Within professional practice we can find a positivist model of naturalization in which the discipline is driven toward seemingly quantifiable processes where statics, construction processes, economy and lately environmental performance are seen as the backbone of architecture, excluding the political questioning of the models of quantification. For example, the tests behind a LEED certificate include parameters like job creation, ethnic diversity, carbon footprint and use of renewable energy sources – each of which is a politically loaded subject. Are biofuels truly sustainable? Are the carbon footprint parameters applicable world-wide? Is a liberal job market – which creates and destroys jobs at a faster rate – a more sustainable employment policy? Can you offset embedded energy with recyclable materials? Admittedly, the number of parameters contained in the assessment would even out potential biases in the quantification models of some of them. But once a 'gold' certification is issued, the building is beyond any question of its sustainability credentials.

Within architectural academia, disciplinarity has been caught up in a critical model of negation that unfolds in two directions: a critique of interiority or a critique of exteriority. A critique that assumes the autonomy of the discipline enables the development of its codes in the absence of external attachments but limits the transformative potential of the discipline. A critique that assumes the attachment of the discipline to external constraints questions the performance of architecture on a wider political level, usually focusing on a political discourse which architecture can only represent. Disciplinary knowledge has fallen captive either to a univocal idea of nature or political representation. Neither approach can effectively engage in the transformation of reality – that is, to work politically – and simultaneously update the core of the discipline. The question is whether it is possible to open up the definition of the discipline to the impact of market forces and technical advances as a drive to evolve its codes and simultaneously engage in practice while operating as a critical agent. Is architecture socially constructed, or is it a faithful representation of reality? Or is it rather the missing link between the community of humans and the community of *things* as political entities?

Previous theories of the building envelope have not been capable of directly relating the technical and physical properties of envelopes to their political, social and psychological effects. As with the impact of certain technical fields (artificial intelligence and genetic modification, for example) on the political arena, a *general theory of the building envelope* could reconstitute a political discourse of architecture with the capacity to produce effects that may actually destabilize power regimes rather than functioning as mere representations of politics, whether of the status quo or its resisting parties.¹⁴

This theory needs to be constructed on a careful analysis of the contemporary envelope's phenomenology as different aspects of the envelope have the capacity to produce specific effects. For example, a more intricate design of the limit between private and public increases the contact surface between both realms, like a radiator adopting an intricate form to increase the surface of heat exchange with the air. A more permeable definition of the property boundary is more likely to effectively accommodate a fluid relationship between private and public in an age when the public realm is increasingly built and managed by private agents. The envelope of a retail complex or the enclosure of an office building lobby are powerful mechanisms of social integration; the façade ratio of a residential block determines the environment's level of artificiality; a gradual delimitation between the natural and the artificial in the façade of an office building could help to improve energy efficiency and minimize its carbon footprint; a more ambiguous appearance may allow for the reprogramming of the building's identity...

13 *Explicitation* is the term used by Sloterdijk as an alternative process to revolution and emancipation. The history of *explicitation* is made increasingly intelligible in the spheres and objects to which we are attached. The categories of the French revolution and left and right, both with their particular techniques of classification and of positioning, no longer correspond to the order of things that is no longer hierarchical but heterarchical. Whether we talk about carbon footprints, deregulation, genetically modified foods, congestion pricing or public transport, these issues give rise to a variety of political configurations that exceed the left/right distinction. The left/right divide still exists, but has been diluted by a multitude of alternative attitudes. See Peter Sloterdijk, *ESFERAS III*.

14 "It's very cheap and easy for architects and artists and film-makers to pull out or to make this kind of criticism," Herzog says. "Everybody knows what happens in China. All work conditions in China are not what you'd desire. But you wear a pullover made in China. It's easy to criticise, being far away. I'm tempted almost to say the opposite...How great it was to work in China and how much I believe that doing the stadium [and] the process of opening will change radically, transform the society. Engagement is the best way of moving in the right direction". Excerpts from a conversation between Herzog & de Meuron and Tom Dyckhoff in *The Guardian*, March 14th, 2008.

The Eden Project, Cornwall, UK.
Grimshaw Architects.



It is at this level that the discussion of the qualities and structure of material organizations – such as difference and repetition, consistency and variation, flexibility, transparency, permeability, local and global and the definition of the ground – that architecture becomes political. The politicization of architecture may also be induced by virtue of representation – and not just by synthesizing physical expressions of political concepts, but by literally redesigning typical living conditions or lifestyles – or by disrupting political norms or assumed environmental imperatives. What is at stake here is the possibility for architectural entities to acquire the status of *Things*, to develop various attachments to a multiple reality, to enter the realm of the contested entities rather than remaining the inevitable product of established forms of power or the mere representation of alternative ideologies.

Political, social and economic factors shape architecture; the question is whether architecture can in turn alter the distribution of power. The hypothesis of this text is that the relationship between politics and architecture is one of mutual influence. Instead of resorting to predefined and all-encompassing political ideologies or utopian references to frame the practices of architecture, we aim to map possible correlations between architectural strategies and political effects in order to mobilize the discipline on a sub-political level.¹⁵ The question now is not whether certain architecture is aligned to the right, to the left or to a certain political party – as in earlier embodiments of architectural politics – but rather what architectural strategies may trigger effects on the distribution of power. We may question whether *explicitation* is sufficient; but in any case, we may need to disengage from conventional political forms in architecture in order to politicize society at large.¹⁶ Until now, buildings considered to have a political program included, for example, city halls, schools, social housing, parliaments, airports... To be able to discern the politics behind a retail park, a commercial complex or a residential development, we need to resort to a political analysis of architecture that has not yet been integrated into the discipline.

The introduction of certain cladding and roofing technologies, such as curtain-wall systems, silicon joints and plastic waterproofing membranes, has eliminated the need for cornices, corners, pediments and window reveals. With respect to envelope technology, the difference between the roof and the walls has disappeared and fenestration is no longer a critical building problem. The growing number of buildings adopting supple envelopes with differentiated patterns is not mere coincidence, but is an index of a convergence of factors leading to a particular design choice. One of the important forces behind this tendency is the evolution of building technology. While just a few decades ago the crucial question for architects was the choice between pitched roofs and flat roofs, today we are considering the choice between the *box* and the *blob* as the primary articulations of the building envelope. Given the advancements in envelope systems, the choice between the *box* and the *blob* is therefore a specious one, unable to structure a robust theoretical frame to discuss the convergence of political forms and architectural technology.

Yet the erasure of those primary articulations of the envelope arises simultaneously from an increase in the complexity of the *faciality* of buildings. What is the nature of public representation in the age of PPP when both corporations and public administrations are procuring their buildings and infrastructures from developers who are sourcing their capital from private equity, hedge funds and Real Estate Investment Trusts (REITs)? Even if the rise of sovereign funds and the re-empowerment of central banks – following the downfall of Northern Rock, Bear Stearns, Fannie Mae, Freddie Mac, and Lehman Brothers – succeeds in removing fluidity from the identities of power, the building envelope will still be required to fulfill a complex set of performances, as the primary regulator between public and private, inside and outside.

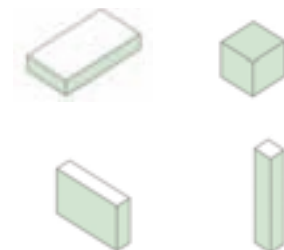
The contemporary city is built for corporations run by administrative boards for multinational shareholders' interests; it is built by building emporiums serving multinational interests as well, who procure the buildings and often run them for decades, taking care of maintenance, security, refuse collection, energy supply and even the provision of infrastructure. All this is happening in a market in which cities are competing fiercely for well-educated citizens and foreign investment, making urban identity a crucial weapon, even if in the wake of more distributed ownership structures identity has become contingent. The choice of the developer and the contractor, the primary agents of urban production, is not democratically managed, and yet they are not entirely free of political – or sub-political – influence. These are the kind of mechanisms that need unmasking if we are to engage with contemporary urban politics.

In order to develop a political discipline, we will try to draw the links between spatial typologies and political modes. Richard Sennett's concept of *spaces of democracy* is an interesting precedent for the articulation of this type of discipline:

15 'Subpolitics is distinguished from politics in that (a) agents outside the political or corporatist system are also allowed to appear on the stage of social design (this group includes professional and occupational groups, the technical intelligentsia in companies, research institutions and management, skilled workers, citizens' initiatives, the public sphere and so on), and (b) not only social and collective agents but individuals as well compete with the latter and each other for the emerging power to shape politics'. Ulrich Beck, *The Reinvention of Politics: Rethinking Modernity in the Global Social Order* (Cambridge, UK: Polity, 1997).

16 Ulrich Beck in *The Reinvention of Politics*, Bruno Latour in *Politics of Nature* and Peter Sloterdijk in *ESFERAS III* attempt to theorize the politico-technological complex that drives contemporary life. They have written extensively about an emerging political dynamics that is no longer ruled by party lines, class, gender or race and has become mediated through technologies such as genetics and information technology.

The four envelope types: flat-horizontal, spherical, flat-vertical and vertical.



his identification of the edge as the most politically active zone of a material organization sets up a model for tracking the political content of an architectural entity. Sennett theorizes that deliberative democracy, which is primarily mediated through language, can be traced back to Greek democracy and located in the *Pnyx*, while associative democracy is mediated through the body and unfolds primarily in the *Agora*.¹⁷ The *Pnyx* is a central organization built as a theater and based on political representation and submission to the majority, while the *Agora* is characterized by the *Stoa*, the limits between the public and the private space, where community-building takes place informally by mere coexistence. Sennett concludes that it is precisely this peripheral position of the *Stoa*, rather than the centrality of political rhetoric, that can produce forms of politics driven by *difference* rather than by *indifference* and *submission*. Establishing a parallel with natural populations, borders appear to be the most biologically active and diverse zones: the areas where interaction between groups happens, where exchange intensifies, where mutations occur. They are also where political energy is concentrated and activated by difference.

Likewise, a general theory of the building envelope aims to draw a direct link between spatial typologies and political modalities or forms of political organization through the identification of a series of concrete domains of architectural performance with attached political potentials. Environmental performance, the drawing and definition of borders, the structuring of interfaces and the representation of communities are some of the political domains where specific architectural actions may trigger substantial political effects without resorting to all-encompassing political paradigms and ideologies.

The structure of this theory of the building envelope has been based on the hypothesis that the political possibilities of the envelope are primarily related to its dimensions, and that every dimensional type can trigger specific technological, social and political effects. Admittedly, the dimensions of the envelope are not usually left for the architect to decide and are usually associated with the type of project, the site constraints and the client's requirements. Therefore this analysis is primarily aimed at laying out the field of political opportunities within the constraints – the attachments – that come with these different envelope typologies. Within those constraints and within each envelope type, there is a wealth of possibilities that can be activated that would transcend the mere technical problems and affect the wider political performance of the buildings. The structure of this analysis has been consistently organized into four categories of envelope: *flat-horizontal*, *spherical*, *flat-vertical* and *vertical* resulting from the specific ratios between the envelope's primary dimensions. What are significant in each category are the technical and the political variations that trigger the particular potentials that this theory attempts to identify in the following chapters. These four categories are aimed at establishing an effective taxonomy capable of bringing together environmental and political performances in a new discipline of the building envelope. Obviously they are particular cases of a much more gradated speciation of envelopes that ranges across them. While there are buildings that occupy an ambiguous position within this taxonomy, it seems improbable that we can initiate a revision of the discipline without resorting to some form of taxonomy, however precarious and ephemeral it may be.

- 17 'Do we find it (democracy) in those spaces or places where the word recedes in importance? A different democratic model would be a place where it does not matter whether people understand each other verbally, but they understand each other by their bodies. They can only do that through the form of association in which they are both together, aroused by each other's presence, but still kept distinct. That is the democracy with the living edge. And that is what I believe in, and I think it is something that architects and planners can make'. Lecture entitled 'Democratic Spaces' by Richard Sennett at the Berlage Institute on March 3rd 2004. See also Richard Sennett, *Respect in the World of Inequality* (New York: WW Norton and Co., 2003). The concept of associative democracy is borrowed from Paul Hirst, *Associative Democracy: New Forms of Economic and Social Governance* (Amherst, MA: University of Massachusetts Press, 1994).

X≈Y>Z. Flat-Horizontal Envelopes. Loose Fit.

The first category of building envelopes comprises those in which the horizontal dimensions are considerably larger than the vertical. Buildings like stations, airports, train stations, industrial buildings, trade fairs, convention centers, markets as well as retail and leisure complexes generally belong to this category. Flat-horizontal envelopes perform by delimiting edges, frontiers and boundaries and sheltering the domains they enclose, operating primarily on the articulation between natural and artificial. Since their comprehensive perception can only be obtained from an aerial perspective, flat-horizontal envelopes are experienced in a fragmented manner and are therefore less concerned with representation and figural performance than with the organization of material flows: traffic, ventilation, daylight, security, etc.

The capacity for buildings to handle large flows of transient populations and goods is one of the *mechanisms of spatial displacement*¹⁸ that global capitalism has created as one of its basic infrastructures. Their ability to host crowds, enclose public space and control flow in an artificially controlled environment, as well as their conflictive relationship with the local, qualifies flat-horizontal envelopes as highly politically charged.

Flat-horizontal envelopes are crucially determined by the structural performance of the roof membrane, as their floor-consuming functions are usually coupled with long-spans. Often, they are also determined by flow control mechanisms: in the case of transportation buildings – stations and airports – the footprint of the envelope is usually related to a security protocol, while in retail parks, stadia and convention facilities the importance of access points and interface with the public space constitute the crucial determinations of the building outline.

From a structural perspective, flat-horizontal envelopes can be generally classified into two groups: those that bring gravitational loads down to the ground at regular intervals, like shopping malls, and those that span between their walls across the space, such as trade fair halls and sport venues. The structural system, the spatial organization and the depth of the envelope are interrelated parameters: if the function is centrally organized, the structural depth increases to avoid intermediate supports as the span grows larger. Distributed flat-horizontal envelopes are built on a structural base unit that covers the ground by repetition, thus economizing resources. The roof pattern, driven by structural modulations or daylight and ventilation supply, is one of the regular features of this typology.

The flat-horizontal envelope induces a strong differentiation in terms of performance between its predominantly vertical and horizontal surfaces. The primary performance of the vertical surfaces is first defensive and then ornamental, primarily determined by the relationship of the object to the outside. Alternatively, if we consider the roof – the predominantly horizontal component of the flat-horizontal envelope – the most critical determinations are primarily environmental and *atmospheric* performances.¹⁹

Due to the volume of air they contain, flat-horizontal envelopes are crucially determined by environmental constraints: the potential of the roof design to provide daylight, solar shading and enhance natural ventilation are critical concerns that will gain importance in the near future as energy becomes a costly commodity. Retail malls, a particular case of this typology, are generally designed as sealed envelopes where interior and exterior are strictly detached environmentally. On the other hand, trade fair halls, stations and airport terminals are often designed as permeable skins, capable of filtering daylight, enhancing natural ventilation and opening views between inside and outside. We can therefore identify two divergent lineages in the evolution of this typology: the first toward a privatized and artificially controlled environment and a sterilized *atmosphere*; the second toward a more gradual integration of nature and public space within the building. The fact that retail malls are privately owned while transport infrastructure and trade complexes are usually run by public bodies may be the reason for this divergent evolution of this type, beyond the functional specificities.

The global economy has triggered some processes that affect the evolution of these typologies very directly. As public infrastructures become increasingly procured by the private sector, and the private sector becomes increasingly concerned with the public nature of retail developments, the degree of engagement between the flat-horizontal envelopes and the surrounding urban fabric intensifies. As flat-horizontal envelopes keep getting larger to provide for a burgeoning urban population and the consequent growth of consumers, goods and transient populations, an interesting dynamic powered by the contradiction between permeability and energy-efficiency emerges.

As energy concerns grow, the incorporation of passive technologies such as daylight provision and natural ventilation is quickly entering the mainstream: sealed

18 David Harvey, *The Condition of Post-modernity* (London: Blackwell, 1998).

19 The notion of an artificial atmosphere is particularly vivid in this type of envelope, which returns us again to the work of Sloterdijk on the artificial diversification of the atmosphere within the capsular society. The human island, the capsule and the greenhouse are the prototypical devices for a new generation of buildings committed to this diversification of the atmosphere in which this envelope typology features prominently. Peter Sloterdijk, *ESFERAS III*.

Stansted Airport, Uttlesford, UK.
Foster + Partners



envelopes are no longer the default solution as a more gradual engagement with the surrounding *atmosphere* is proving to be more sustainable. While compactness is one of the most energy-efficient qualities of an envelope, the edge surface and the roof may be able to enhance the relationship between the internal and the external environments – both as a climatic device and as a physical and visual boundary. The material and geometrical configuration of the edge is crucial to the articulation inside and outside: insets of the footprint or corrugations of the vertical surface and the use of permeable materials may contribute to enhancing osmosis between the contained program and its surroundings.

The problem of inserting a large shed into an urban fabric is well known. The lack of active frontages turns flat-horizontal envelopes into large-scale obstacles to urban flows, sterilizing their surroundings with a usually forbidding edge. Stadia, stations, retail malls, trade halls and factories are all structures primarily driven by the necessity of roofing over a large area and tend to present a very low level of environmental engagement, as these containers do not usually contain activities with a strong interface with the outside. A classical solution to this problem is to wrap them with complementary programs capable of producing active frontages.

One of the specificities of this envelope type is a very high ratio of solar exposure per square meter of covered floor plate which makes the roof features crucial to the environmental performance of the building. The flat-horizontal envelope's roof produces an extended horizontal limit that provides shelter from temperature, rain and excessive solar exposure, but is also required to allow daylight and ventilation into the enclosed volume. Due to its waterproofing functions, the horizontal limit of building envelopes was traditionally rather definitive, but as the envelope becomes more extensive, a certain degree of opening is necessary to allow for ventilation and daylight unless an entirely artificial environment is implemented.

One of the most interesting concerns of the flat-horizontal envelope is whether its relationship with nature is one of exclusion or inclusion, and furthermore, what sorts of natures this relationship implies. The flat-horizontal envelope usually engulfs nature in an idealized form, as all those bamboo gardens and water features in airports and convention centers demonstrate. The proliferation of biospheres and biotopes as part of this envelope typology resonates with Latour's proposal of a *political ecology* based on the multiplicity of natures, as an opportunity to challenge *mononaturalism*.²⁰

The possibility of a manipulation and eventual reformulation of the ground is an alternative challenge to the idealized version of nature that is frequently deployed in these projects and that usually excludes political considerations from its conception. Yet these opportunities are often misspent. The technologies of the flat-horizontal envelope roof can be effectively used to produce the rearrangement of daylight, airflow and solar intake for the production of a specific atmosphere without having to resort to the radical detachment of interior from exterior. Could interior gardens be used to reduce carbon dioxide inside the building in order to minimize the air renewal cycle, and therefore the heating loads in winter? Can vegetation act as a humidifier helping to cool the air in the summer? Is nature an ideal notion to be represented inside these large envelopes, or is it an integral part of the building systems?

On the other end of the spectrum of possibilities, the roof of the flat-vertical envelope can operate simply as a new datum: an artificial ground which does not engage in atmospheric continuities, but challenges a uniform concept of nature and alters a politically loaded architectural element. The treatment of large-scale roofs as new natural grounds seems to have become a default solution for buildings today as green credentials and organic features have become a favorite with both politicians and urban activists.²¹ The success of a certain infrastructural approach to architecture in recent years suggests a similar process of *multinaturalization* of the human environment.

The use of large flat-horizontal envelopes as grounds, often employed in landscape design, can be found across a variety of programs and locations. The COEX Center in Seoul, the Suntec City Mall in Singapore and the West Kowloon Mall in Hong Kong are examples where retail facilities act as connective tissue to a large urban complex, forming a socle or ground onto which other parts of the program are placed. The sort of nature that is constructed on these artificial grounds is often an idealized one rather than an exploration of potential interferences between nature and the artificiality of its physical support.

Digging the program underground or generating multiple grounds through bifurcation avoids the disruption that flat-horizontal envelopes may produce within the urban fabric by blocking arteries and destroying active frontages. If in the modernist ideal the democratization of the ground was produced through its reproduction (the Maison Domino or the elevated walkways built in the 1960s as a solution to the intersection between pedestrian and vehicular traffic), these new strategies of urban

20 'Political ecology' is the term Bruno Latour proposes to describe an anti-fundamentalist politics of nature in an attempt to overcome traditional distinctions between nature and society, subject and object as well as human and non-human. Bruno Latour, *Politics of Nature*.

21 See interview with Bjarke Ingels in *Volume* n. 13 (2007): 48-51.

Roof as ground-infrastructure: Namba Parks, Osaka, Japan. Jerde Partnership.



Roof as atmosphere-inducer: Southern Cross Station, Melbourne, Australia. Grimshaw Architects.



ground bifurcation are usually attached to active frontages on several levels and incorporate a very high density of program, particularly retail. The advantage of this type of intensified ground is that it produces a series of gradations between natural and artificial capable of adjusting to the intensity of the urban field they are serving.²²

Generally the requirement to make the roof more permeable to light and air implies a lower capacity to work as a ground, as a physical infrastructure. The question for flat envelope roofs is then whether the natural – or rather, what natural – lies below or above the envelope. Does the design attempt to produce an *atmosphere* by reducing artificial lighting, moderating the temperature variation and inducing natural ventilation? Or is the purpose to act as a ground by increasing thermal mass and insulation, retaining storm-water and absorbing carbon dioxide with vegetation? Once the flat horizontal envelope has ceased to act as insulation between the natural and the artificial, it will develop entirely different mechanisms to qualify either as an atmosphere-inducer or as a ground-infrastructure. In order to produce a more gradual determination of the atmosphere, we will find unitized roofs built from a base unit resulting from the intersection between structural solutions, drainage paths, daylight provision and natural ventilation. Stansted Airport is a particularly interesting example of the modular construction of an atmosphere, integrating all environmental control systems in a base unit that builds the whole by repetition.

As carbon footprints and energy prices become key subjects of global geopolitics, energy consumption and carbon dioxide emissions will become crucial political performances of a building. Building technologies can substantially improve these performances by increasing the insulation capacity and thermal mass of the envelope, but energy consumption is primarily a geometrical problem, a function of compactness: the less external façade a building has, the easier it becomes to maintain its internal temperature.²³

Technically, the limits of a large-scale envelope derive from the provision of daylight and fresh air, but there is already an arsenal of systems to solve this problem without having to resort to energy-intensive artificial lighting and air conditioning: mechanically oriented mirrors bring daylight deep into the space, water jets and wind turbines produce adiabatic cooling and atria can be strategically distributed to produce natural ventilation through stack effects. The capacity to enclose and manage vast volumes of air and produce energy-efficient artificial atmospheres capable of minimizing the consumption of natural resources crucially depends on the capacity of the envelope to regulate flows of solar radiation, air, water, people, vehicles, etc.

Sloterdijk's 'politics of climatization'²⁴ points to a process in which growing sectors of urban space are given to private agents to develop and maintain: gardeners, event managers and private security agents are part of the design of these *atmospheres*. Koolhaas' *junkspace*²⁵ is another description of the same phenomenon of sanitization of ever-larger areas of the city, providing a safe –environment, assuming we are prepared to surrender police duties to private security services. Norman Foster has just announced Crystal Island,²⁶ a project in Moscow that will contain 2.5 million square meters under a single envelope, the world's biggest building, approximately five times the size of the Pentagon building. The project is described as an example of sustainability, able to improve the environmental performance of the building by swallowing ever larger areas of the city under a single envelope designed to enhance natural ventilation and daylight.

Whatever contempt we may feel for the *junkspace* megastructures and other *social uteri*, they have an undeniable popular appeal and their energy performance is quickly improving and may eventually surpass the conventional city fabric where the requirements for natural ventilation and daylight force the adoption of a smaller envelope texture with a much higher envelope ratio. The question is whether the environmental achievements of Crystal Island and the refinement of its skin devices to allow for atmospheric gradations across the surface will be sufficient to guarantee an adequate political performance. The political dangers of the scale of the flat-horizontal envelopes lie in the scale of space they regulate: the fundamental difference between, say, Yona Friedman's Ville Spatiale and the Mall of America is that the first is not an envelope but primarily a frame, while the second is a container with a thoroughly sealed and dressed envelope. Because of its smaller grain, traditional city fabrics were perhaps better adapted to intensifying a social mix and the coexistence of diverse population groups in a space. The only way to ensure that the skin of flat-horizontal envelopes does not create a radical split between those who are included – let's say shoppers with a certain acquisitive power – and those who are excluded is to devise equally sophisticated mechanisms of permeability across the skin. And the larger the envelope becomes, the more sophisticated the interface has to be to guarantee an appropriate level of mix in the population of the envelope. The transparency of

- 22 Some examples of this strategy of public space bifurcation on two or more levels can be found in projects by the Jerde Partnership, for example in the Beurs-traverse in Rotterdam, Namba Park in Osaka and Canyon in Istanbul.
- 23 This is something that Buckminster Fuller identified some time ago. His proposal of a giant dome over Manhattan in *Operating Manual For Spaceship Earth* (New York: E.P. Dutton, 1971) was a groundbreaking proposal in the development of atmosphere design.
- 24 Peter Sloterdijk, *ESFERAS III*.
- 25 See 'Junkspace' in AMO-OMA/Rem Koolhaas et al, *Content* (Köln: Taschen, 2004), 152-161.
- 26 'Enclosed within a vast mega structure covering a total floor area of 2.5 million square meters – the project's scale is unprecedented. Conceived as a self-contained city within a city, it contains a rich mix of buildings including museums, theatres and cinemas, to ensure that it is a major new destination for the whole of Moscow'. 'Crystal Island will have a range of cultural, exhibition and performance facilities, approximately 3000 hotel rooms and 900 serviced apartments, as well as offices and shops, designed to maintain a dynamic and animated public realm throughout the day. Residents are able to work and live within a densely planned area where every amenity is within easy walking distance, including an international school for 500 students. Mixed-use also presents a strong case for energy balance, with individual components using energy at different times, while reinforcing the breadth of economic and social activity of the area'. 'This terracing creates a series of wintergardens, which form a breathable second layer and thermal buffer for the main building, shielding the interior spaces from Moscow's extreme summer and winter climates. A vertical louver system sheaths the internal facades to ensure privacy for the individual apartments'. 'Dynamic enclosure panels slotted into the structural framing allow daylight to penetrate deep into the heart of the scheme and can be controlled to modify the internal environment – closed in winter for extra warmth and opened in summer to allow natural ventilation. Energy management is at the heart of the design, with additional strategies to include on-site renewable and low-carbon energy generation'. From Foster + Partners website, www.fosterandpartners.com.

the membrane, the projection of an image of exclusivity or accessibility and adjustment to the surrounding urban fabric are devices that can be used – in addition to the security policies²⁷ – to enhance the mix. The politics of climate offer the possibility for environmental technologies to disrupt the logic of the controlled envelope. Just as the air conditioner enabled large areas of horizontal space to be enclosed, the sealed envelope is in turn superseded by open, permeable horizontal spaces whose openness is justified on environmental grounds – for example in the Masdar project from Foster and Partners in Abu Dhabi. The *eco imperative* becomes a means to break down the impermeability of membranes and to intensify contact between populations.

An interesting case study to analyze in this respect, particularly significant for the relationship between large-scale flat-horizontal envelopes and urban fabrics, is the retail developments done in second tier cities in the UK in the last ten years. This process started in 1996 with the Sequential Test, a planning policy issued by John Gummer, the Conservative Secretary of State for the Environment, which gave priority to mix-use development and inner-city sites over out-of-town locations as a response to failing city centers and the failed strategy of privatizing the urban regeneration processes. Urban centers in Britain had reached levels of substantial degradation in the mid-1990s and the Sequential Test was designed to entice the private sector to invest in inner-city sites by making the price of inner-city property so low that moving retail to the suburbs, as in the American model and promoted in the UK by early Thatcher policies, reached its extreme in the completion of the Bluewater mall and no longer made sense. Inner-city locations came together with infrastructure and catchment population. This policy has resulted in large sectors of the city centers of Birmingham, Bristol, Liverpool, Leeds, Leicester, Manchester, Sheffield and Southampton being bought up and redeveloped by private developers while being closely monitored by intense public scrutiny. This process has unfolded through the New Labour tenure which promoted these developments as strategically vital to the survival of city centers, triggering a shift in the orientation of UK retail development and planning in the late 1990s toward a focus on urban regeneration. A beefed-up public planning infrastructure was put in place by the Labour Government to continue what John Gummer had already started during the conservative governments; The Commission for Architecture and the Built Environment (CABE) and the Urban Task Force were set up in order to promote denser urban cores and an ‘urban renaissance’. City councils pioneered the link between retail and urban regeneration as a central component of a strategy focused on the development and promotion of urban cores. In turn, the notion of such a ‘place building’ – which has been at the heart of New Labor’s urban policy agenda – has become entwined in current revisions of retail planning policy.

The resulting struggle between old urban structures and the *junkspace* invaders is certainly being played out on the domain of the envelope and performed as a negotiation between developers, who want to swallow as much space as possible within their complexes, and urban planners, who want to keep as much permeability as possible throughout these complexes and extend the city fabric through them, producing active frontages and intensifying permeability. The final form becomes a hybrid between the existing urban fabric and the diagram of a suburban retail massing. The question is whether this is actually a regeneration of the urban centers, as New Labour claims, or whether it is the takeover of the inner cities by a sort of alien organization with air-conditioning and private security. In effect, the process denotes politics played out around the concept of the envelope: the urban fabric may be understood as a single envelope pitched against the envelope of the retail mall. As with the example of *climatization*, it seems that the description of the politics of each condition can be expanded through a dialectical conception: the urban core versus the suburban envelope. The envelope as a concept becomes a way to politicize all typologies (new and old) and represent in any given example the intersection of technology, social values, environmental or security performances and human constituencies: a vehicle for the discipline to define political, social and cultural terms.

The possible outcomes of this gradation range from the small grain of the traditional urban envelopes, proposed by the New Urbanists and Prince Charles, to the omnivorous envelope of Crystal Island. In the first model, the envelope coincides with the demarcation of public and private spheres. There are clearly delimited responsibilities for public and private agents in policing, maintaining, cleaning and controlling the environment with a clear division between the public and the private at the envelope line. The second model requires a more complex political structure in which a single operator – in the case of the British inner-city retail complexes, a private one – is capable of ensuring the maintenance of a piece of the city, including both private and public areas. One could argue that the privatization of the public realm by the retail sector on a planetary scale is a politically corrupt urban strategy

- 27 In 2005, Bluewater Shopping Centre, birthplace of the ‘*chavs*’ – a teenager movement in the UK characterized by wearing sports clothing with hoods and gold jewelry and a cult of consumerism, drug abuse, anti-social behavior and life on benefits – forbade entrance to individuals sporting hooded sweatshirts or baseball caps. The policy allegedly increased the number of visitors to the center some 20%. Bluewater Shopping Centre, the largest mall in the UK, has been identified also as a major target of radical Islamic groups.

Crystal Island, Moscow, Russia.
Foster + Partners



in which large sectors of public space are given to profit-seeking operators. Yet as energy become a scarce resource, we may reach a threshold where minimizing the building envelope may strongly favor the process of hybridization between the public and the private spheres. The New Urbanist development of Seaside and the new town of Poundbury, despite keeping a strict consistency between the envelope that separates public and private and inside and outside, are hardly examples of open public spaces. Whether the commercialization of the public realm is the inevitable outcome and whether the management of such operations should be left in private hands are different matters. But as environmental technologies make these structures more energy efficient and regulations strive toward energy efficient, high density urban development, there is no reason why those spaces may not eventually revert to public ownership and management.²⁸

To exactly what degree architecture can effect social integration, the redistribution of wealth and the maintenance of social mobility is difficult to determine. But without reducing the political potentials of the building envelope to a question of energy efficiency and resource usage, it is clear that architecture can have decisive environmental effects. Buildings account for 48% of carbon emissions and over 60% of energy consumption. Carbon emissions will be a crucial geopolitical issue that will have to be globally managed to avoid a few economies causing global damages to the ecosystem. A global carbon footprint map shows the relationship between wealth, carbon emissions and the consumption of energy resources: wealthier states are 'invading' the poorer ones by exceeding their carbon footprint. Energy prices, rising quickly due to the massive increase of the middle class in emerging economies, are dramatically affecting the global economy. Fossil fuel energy sources, concentrated in selected areas of the globe, are a major source of geopolitical strife. When a building substantially reduces its energy consumption, it contributes to defusing global tension. In using renewable energy sources, a building reduces energy dependence and mitigates global warming. In order to do this it needs to engage local climatology and resources.

The engagement with ecological concerns is contemporary architecture's most direct path to political effect, and this performance largely depends on the envelope's design. *A political ecology* enables architecture to regain an active political role and overcome the division between nature and politics. The design of flat-horizontal envelopes can play a decisive role here by ensuring a gradated transition rather than a boundary of exclusion, both environmentally and socially, and producing a multiple concept of nature.

- 28 In 1994, the Supreme Court of New Jersey passed judgment on a sentence against J.M.B. Realty Corporation, the owner of several suburban shopping malls in New Jersey in favor of the New Jersey Coalition Against War in the Middle East who had demanded the right to demonstrate and hand out pamphlets against the first Iraq War in several malls owned by the plaintiff, arguing that the malls are effectively public space, despite private ownership. This decision demonstrates the legal status of retail compounds as public. See *New Jersey Coalition Against War in the Middle East v. J.M.B. Realty Corporation*. Supreme Court of New Jersey, 1994.138 N.J. 326, 650 A.2d 757.

Retail development as urban regeneration: The Bullring, Birmingham, UK, showing Future Systems' Selfridges.



$X \approx Y \approx Z$. Spherical Envelopes. Relaxed Fit.

The spherical envelope's dimensions are approximately equivalent to each other; cubic, spheroidal and polygonal geometries are also particular cases of this typology. In principle, the spherical envelope has the lowest ratio between its surface and the volume contained within. The specificity of this type is precisely the relative independence that the skin acquires in relation to its programmatic determinations, as function is not usually determined by proximity to the outside and therefore by the form of the envelope. This often implies a wider variety of programs inside, each with different environmental requirements. Spherical envelopes generally enclose a wide range of spatial types with specific functions, rather than being determined by the provision of a repetitive spatial condition, as in residential or commercial projects. Unlike other envelope types in which the border between public and private occurs on the surface of the container, the spherical type often contains gradients of publicness within. Spherical envelopes often correspond to public buildings, buildings that gather a multiplicity of spaces rather than a repetitive type of space: city halls, court houses, libraries, museums, indoor sports facilities, etc.

Because of the low strength of attachment between surface and contained space, the design of the spherical envelope focuses on the surface itself. While in other envelope typologies the massing of the container is more directly driven by the functional determinations of the programmatic grain – for example the depth of a cellular office or of a bedroom – the spherical envelope usually contains a community of diverse functions. The spherical envelope – like the flat-horizontal type – has been decisively affected by the evolution of building technologies, because of its low surface to volume ratio. The availability of air-conditioning systems and the development of curtain-wall technology have made fenestration optional as an envelope system and released the structural constraints, enabling tilts, curves and bends in the envelope's surface. The continuity between the roof and the wall – an improbable trait in conventional building – has been made easy by the incorporation of plastics into the construction industry, eliminating the cornice line as a necessary articulation; the corner, a singularity derived from construction geometries and property alignments, is also weakening as the limits between private and public fade and the structure of ground ownership becomes challenged by contemporary urban development instruments...

Political expression and identity are particularly important in the dynamics of the envelope as regulators of exchanges between inside and outside. The fenestration pattern in a building's façade has psychological and symbolic connotations and has been historically attached to political representations. The symmetry and asymmetry as well as the regularity and irregularity of the fenestration have long been associated with political concepts such as order and freedom, equality, diversity and transparency. For example, the *fenêtre en longueur* was an index of the lack of compartmentalization and internal freedom associated with the *plan libre*. Herman Hertzberger used to joke that in his student years, left-wing architects were those who used horizontal windows, while right-wing architects had a clear preference for vertical windows. The correlation between the patterns of fenestration and those of inhabitation, and the coincidence or divergence of physical, visual, thermal and atmospheric transparencies across the envelope membrane are acquiring a new relevance through currently developing environmental and security concerns.

But, beyond the emerging technological possibilities there is also a whole new politics of *faciality* at play affecting the envelope as the locus of political expression. The emergence of new political forms runs in parallel to the development of envelopes that resist primitive models of *faciality*. As swing voters become the most crucial electorate and political tactics move away from party-line ideologies and political rhetoric, favoring instead *sub-political* mechanisms such as trends, movements and other *affect-driven* political forms,²⁹ we are witnessing the proliferation of modes of *faciality* that can no longer be structured by the oppositions between front and back, private and public, or roof and wall. Once cornices, corners and windows are no longer technically necessary and the private and public are tangled in an increasingly complex relationship, the hierarchies of their interface become more complex: the building envelope must adopt more complex reference systems to become a field of intersection between identity, security and environmental performances. From Seattle to London to Beijing, the *faciality* of the envelope has proliferated to such a degree that the pattern of construction joints seems to have become the new scale of articulation. This is most visible in the spherical envelope because of its association with public building typologies and because of its low envelope ratio. The spherical envelope features the lowest level of environmental constraints and the highest levels of representational demands.

The classical approach to the envelope as a vehicle of expression and identity was to use a conventional architectural language inscribed on the surface.

- 29 As Nigel Thrift has pointedly noted, contemporary politics are progressively less reliant on representation and proposition and more dependent on the production of *affects*. See Thrift, *Non-Representational Theory. Space, Politics, Affect* (London: Routledge, 2007).

Seattle Public Library, Seattle, US.
Office for Metropolitan Architecture



Eighteenth-century French academic theory held that the façade of a building should reflect its program and purpose, a doctrine that was adopted by the modern movement and that dismissed the classical tradition according to which the façade represented the building *allegorically* as a signifier that located the building within a hierarchy of socio-political meaning. Instead, the façade was seen as the logical result of the program – not as its representation. The architecture of the Enlightenment still referred back to classical architectural languages as a sort of revival of Greek democracy, but simultaneously grounded itself on modularity and a rigid metrics of space as organizing principles representing the egalitarian values of the Saint-Simonian ideal democracy. During the modern period, the façade ceased to be an allegory altogether, and instead became a symbol: the external surface of the building, cleansed of any reference to stylistic convention, was now supposed to act both as an indis-sociable part of the whole building and as a symbol of modernity.³⁰ *Faciality* had entered a crisis, and the envelope was directed toward the maximum degree of transparency, literal or phenomenal.³¹ The question became how this transparency should be structured, because the lack of an overt allegory in the façade did not necessarily imply the façade's disappearance as a quasi-autonomous element capable of representing a building's internal organization. It is undeniable that façades are still designed to communicate, although in an uncoded mode, unlike in pre-modernist practices.

If the political history of the 20th century could be interpreted as the exploration of public freedoms in respect to the normative basis of democracy, the development of the building envelope could be partially described in parallel terms. The modern movement was invested in making the façade disappear, merging it into an organic whole in which the external surface of a building would become a mere by-product of either its programmatic organization or its constructive technology. As Alan Colquhoun has described, these investigations follow two primary lineages: an evolutionary, technical and aesthetic approach shared by the *Esprit Nouveau* and *Neue Sachlichkeit* movements of the mid 1920s, and a more ideologically charged approach represented by Expressionism, Futurism, *De Stijl* and Constructivism, in which the building is considered transparent and fluid rather than divided into rigid compartments or bound by solid walls. This fluidity has an ethical component, as spatial boundaries are seen as symbols of social oppression to be avoided in a non-hierarchical, democratic society.³² And yet, faciality could not entirely disappear: in Chandigarh, Le Corbusier strove to synthesize the figures of function by literally removing the façade plane while producing an element, the *brise-soleil*, supposedly designed to reduce solar heat gain, but truly devised to compensate for the loss of structural expression in the modern curtain-wall, providing an opportunity for the façade to retrieve some of the plastic interest and representational potential it had lost with the removal of the classical orders. In Ahmedabad, Louis Kahn expanded this idea of transparency into a potent *faciality* by exposing the spatial structures and programmatic units in the building. Yet even if an identity grounded in *faciality* was in crisis, the concept of modularity, reinforced by the idea of industrial production, remained solidly in place as a symbol of a democratic and egalitarian society. Mies van der Rohe targeted another form of transparency and *faciality* by revealing the load-bearing structure and the fabrication of the envelope as its primary expression.

As the modernist world order collapsed at the onset of globalization at the end of the 1960s, *faciality* was rehabilitated and legitimized. The post-modern period reinstated the relevance of the envelope as a representational mechanism, taking advantage of new building technologies to create plastic effects alienated from their contexts, in correspondence with the prevailing capitalist ideology of individualism and the spectacle. This architecture implied a future urbanism that differed as much from the traditional city as from the utopian cities of the 1920s, as well as from the models advanced by the critics of utopianism in the 1950s. Architects like Venturi attempted to redeploy language and allegory, even in an ironic mode, as a legitimate component of envelope design in the age of rootless and spectacular capitalism.

As language becomes politically ineffective in the wake of globalization, and the traditional articulations of the building envelope become technically redundant, the envelope's own physicality, its fabrication and materiality, attract representational roles. Globalization has on the one hand neutralized the effectiveness of architectural language, propelling the iconic and symbolic as communicative devices while increasing the demands for the envelope's capacity for *insulation* and *immunization* as a technical problem. As the envelope type that comprises most public building typologies, the spherical suffers from a particularly intense conflict arising from the demand to provide a consistent identity for the community and the demand to *insulate* and *immunize*, environmentally and security-wise, against an increasingly abrasive global atmosphere.

- 30 See Alan Colquhoun, 'The Façade in Its Modern Variants' *Werk, Bauen + Wohnen* n. 12 (2005): 12-19.
- 31 Colin Rowe, 'Transparency: Literal and Phenomenal' in *The Mathematics of the Ideal Villa and Other Essays* (Cambridge, MA: MIT Press, 1976).
- 32 'The history of the façade between 1910 and the 1960s exhibits two partly parallel and partly sequential tendencies. The first tendency is the impulse to destroy the façade as such. The building should not be considered as consisting of plan and elevation but as an organic whole in which the external surface of a building is a by-product of its internal organization. The building is thought of as transparent and fluid, and should not be divided into rigid compartments or bounded by solid walls. This fluidity also has an ethical component. It symbolizes a non-hierarchical democratic society. Spatial boundaries are symptoms of social oppression. This tendency has an "idealist" and a "materialist" side deriving on the one hand from Rousseau and German idealism and, on the other from Marxism. In terms of architectural history, this ideology belongs to the first pre-war phase of modernism. It is represented by Expressionism and Futurism, but continues with De Stijl, Constructivism and the avant-garde magazine *ABC*. *Beiträge zum Bauen* after WWI, still with contradictory idealist and materialist connotations. The second tendency is less philosophically radical. It sees the façade in evolutionary, technical, and aesthetic (rather than ethical) terms. This view was shared by the *Esprit Nouveau* and *Neue Sachlichkeit* movements of the mid 1920s. The façade is not abolished but continued "by other means". Alan Colquhoun, 'The Façade in Its Modern Variants'.

The design of spherical envelopes has consequently focused recently on the construction of the surface itself, both as an environmental and security device and as the locus of symbolic representation. We can observe the proliferation of spherical envelopes tending toward a multi-directional, *differential faciality*, which resists traditional protocols in which representational mechanisms can be precisely oriented and structured. Nouvel's unbuilt, yet influential Tokyo Opera, Gehry's Guggenheim Museum, Future Systems' Selfridges Department Store, OMA's Seattle Public Library and Casa da Musica and Herzog & de Meuron's Prada Tokyo are notable examples of these tendencies. This *differential faciality* is often achieved by dissolving the envelope's articulations as in Foster's Swiss-Re building in London in which the cladding system is extended to the top of the building. There is no crowning or cornice line in this building, the closest element being a floating rail for the cleaning cradle hanging toward the top of the building. The pediment is missing and the form narrows toward the bottom producing an effect of instability. Freed from the technical constraints that previously required cornices, pediments, corners and fenestration, the articulation of the spherical envelope has become increasingly contingent and indeterminate. OMA's Seattle Public Library or Gehry's Los Angeles Disney Hall are also notable examples of this challenge to the conventional *faciality* of public buildings. The demise of the primitive figures of building *faciality* – the *white wall/black hole system* in Deleuzian terms³³ – has found resonance in the availability of certain technical possibilities (such as printing technology and CAM manufacturing) which have enabled architects to play not only with tessellation geometries and material textures, but with a wide repertoire of layers that may sometimes play an ornamental role, but also perform technical functions such as solar shading and visual obstruction. The decoupling of the patterns of visual, thermal and atmospheric permeability has opened unprecedented possibilities of *multiple facialization* of the envelope by dissolving or intensifying the joints at will through the phasing and de-phasing of these layers, for example in Herzog & de Meuron's Eberswalde Library or *Ricola Factory*. The conventional figures of building *faciality* have been replaced by a more nuanced interfacial embodiment in which different layers of performance are played out against each other to produce a far larger range of effects.

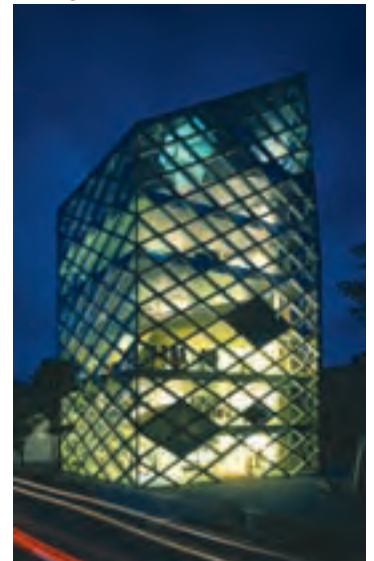
The current appetite for the envelope as a device of *insulation* and *immunization*, as well as the devaluation of language as a means of architectural expression, has shifted the envelope away from language and signification toward a *differential faciality* in which the materiality and tessellation of the surface have become critical design mechanisms mediating between simultaneous demands for iconicity and immunization. The geometry of the tiles, their degree and variation, as well as the pattern and nature of joints, have assumed the task of architectural expression. As the articulation of the volume becomes infinitely pliable, it is the construction of the envelope that is charged with architectural, social and political expression.

The general tendency toward the reinforcement of the envelope's air-tightness is played out in the joint pattern and modulation rather than the fenestration structure. The emergence of polygonal tessellations as a contemporary tendency in envelope design – for example PTM's Beijing Watercube – may be related to the bubble geometries of *differential faciality*, but it is also an index of a contemporary desire for insulation. The construction of bubble envelopes is made possible by polygonal geometries which may also reduce joint length: polygonal tessellations have smaller joint length per surface unit than rectangular grids. Gehry's fish-like skins are another index of this tendency aimed at the erasure of the hierarchical *faciality* and modular joint grid that characterize standard curtain-wall cladding systems. In doing so they may be also exploring the expression of a sort of politics that move away from the ideal, modular democratic organization based on indifference, independence and interchangeability. If modularity was typically a quality of a democratic system that prioritizes the part over the whole, some of the emerging envelope geometries seem to be exploring modular differentiation as a political effect.³⁴

This explosion of the spherical envelope's *faciality* tends to produce an air-tight, seamless material texture in which the consistency between the surface tessellation and the geometry of the envelope and its singularities – folds, edges – has interesting political resonances: is the pattern of the envelope consistent with its frame, with the geometry of the envelope? This is a difficult consistency to produce once we move away from the geometries based on flat vertical surfaces that have constituted the core of traditional *faciality*. For example, OMA's Seattle Public Library is remarkably oblivious to the articulation between the tiling of the faces and the overall geometry, particularly visible at the edges of the volume. In contrast, Herzog & de Meuron's Prada Tokyo exploits this consistency and extends it even to the section of the building which is in a way a reversal of the modernist ambition of transparency, enacted from the pattern of the envelope toward the internal volume. Is it possible to remain

- 33 See 'Year Zero: Faciality' in Gilles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia* (Minneapolis: University of Minnesota Press, 1987).
- 34 John G. Blair observes that when the word module first emerged in the sixteenth and seventeenth centuries, it meant something very close to model. It implied a small-scale representation or example. By the eighteenth and nineteenth centuries the word had come to imply a standard measure of fixed ratios and proportions. 'A modular system is one that gives more importance to parts than to wholes. Parts are conceived as equivalent and hence, in one or more senses, interchangeable and/or cumulative and/or recombinable'. Blair, *Modular America: Cross-Cultural Perspectives on the Emergence of an American Way* (New York: Greenwood Press, 1988).

Prada Aoyama, Tokyo, Japan.
Herzog & de Meuron



transparent in the age of spectacular capitalism and immunization? Prada Tokyo, a paradigmatic building of this condition built for a super-brand that requires a certain level of exclusivity – and perhaps of exclusion and atmospheric insulation – developed a contemporary form of transparency that is one of the most interesting attempts to address the contemporary demands placed on the envelope.

As transparency has proven a politically naïve tactic within global capitalism, where the design of an adequate public interface requires detachment between expression and building efficiencies, while growing security and environmental concerns legitimize the consistency of the envelope, *faciality* is being deployed without apologies. Yet this renewed self-consciousness is now embedded in the physicality of the skin, pervading the materiality of the construction itself. Given language's devaluation as a means of expression and representation within global capitalism, the contemporary envelope – the primary depository of contemporary architectural expression – is now invested in the production of *affects*, an uncoded, pre-linguistic form of identity that transcends the propositional logic of political rhetorics. These rely on the material organization of the membrane, where the articulation between the *parts and the whole* is not only a result of technical constraints but also a resonance with the articulation between the individual and the collective, and therefore a mechanism of political expression.

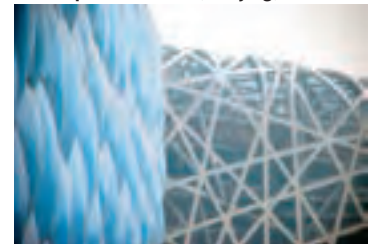
In Sennett's definition of associative democracy, Latour's *Actor-Network Theory* and Sloterdijk's *foams* the articulation between individual and society, *part and whole*, is drawn by influences and attachments across positions, agencies and scales that transcend both the individuality of the part and the integrity of the whole. The emerging social structures theorized by De Landa, using Deleuze's theory of assemblages, to posit trans-scalar social entities from sub-individual to transnational that characterize globalized societies and their heterogeneous populations are coincident descriptions of emerging forms of social and political organization that cannot be expressed by modular grids.³⁵ Assemblages are non-essentialist, historically contingent actual entities (not instances of ideal forms) and non-totalizing (not seamless totalities but collections of heterogeneous components). In these emerging social assemblages, individuals, groups and other possible *actants* are primarily defined by relations of exteriority and need to engage with different assemblages without losing their identity. The relationship between an assemblage and its components is complex and non-linear: assemblages are formed and affected by heterogeneous populations of lower-level assemblages, but may also act back upon these components, imposing restraints or adaptations in them.

The modular grid, indifferent to the relative weight of individuals or politically active subgroups, very much embodies the ideals of democratic equality and liberal individualism. It demonstrates a preference for non-hierarchical organizations and other ideal notions of democracy in which individuals are equal subjects to the will of majority. 'Weighted' models of democracy – either those committed to the exercise of civil liberties or those that are driven by a hierarchical bureaucratic regime overlaid onto basically democratic protocols – tend to relate better to *allometric* modularities or *variable repetitions* as traits of expression to reintroduce a collective purpose to a modular system without resorting to primitive forms of hierarchy. Associative democracy's space is primarily mediated through matter rather than language as a vehicle of representation and the envelope's materialization and modes of *faciality* are a primary subject for this tendency. The drive toward seamless differentiation is in turn mobilizing a variety of technical alibis: whether a differentiated view or a differential solar exposure, the envelope's tessellation patterns are now under pressure to produce contemporary political *affects*. Simple modularity gives way to a weighted modularity that resonates with the swarm-like organizations characteristic of both *associative* and *weighted democracies*, depending on whether they are formed bottom-up or top-down. Two examples of spherical envelopes, Herzog & de Meuron's Signal Box in Basel and the Ricola Storage Building, are experiments in producing a differentiated envelope capable of dissolving the figures of *faciality* into a multiple, differentiated skin. The façade of the Dominus Winery, another Herzog & de Meuron building, goes even further in the redefinition of a relationship between the part and the whole in the construction of a building envelope by resorting to the contingency of a material pattern to produce differentiation.

Within contemporary politics, power seeks to represent itself in a very different way from how other political regimes did in the past – think of Stalinist Russia or Fascist Italy. It is not politically correct to demonstrate power, so its manifestations are much more ambiguous and subdued. It is fascinating to see how China is now choosing its architectural representation as the basis of its new global might. The Olympic Games were a huge experiment in the formation of a new national identity and the deliberateness and precision being used in its architectural formulation is

- 35 Manuel De Landa, *A New Philosophy of Society: Assemblage Theory and Social Complexity* (New York: Continuum International, 2006).

Tessellated façades: Olympic Stadium and Aquatics Center, Beijing, China.



brehtaking, independent of the agents and authors used to build this image. The Olympic Stadium, the Aquatics Center and the CCTV building display a similar massing strategy: a more or less non-articulated shape built on a huge scale. There is no illusion of transparency or openness, rather the ambition to construct a well defined envelope. So far, we have not strayed far from Mao, but a closer analysis of these skins draws out the differences: the three cases have been systematically structured with a varying pattern, probably aimed to portray a culture of diversity and collective spirit – rather than an individualistic, modular one – in spite of the gigantic scale of the projects being implemented. These buildings speak volumes about the regime³⁶ and the message seems to be that they can still organize massive projects for a huge population while being sensitive enough to integrate specificities or multiple agencies rather than driving everything through a central command. Or, they may be saying that communist equality cannot simply be translated into the independence of individuals who act within the rules and that certain adjustments may apply, as in a swarm formation. In any case, the blue suit has been dropped as inappropriate to China's new political identity, and the homogeneous mass of proletarian public has been replaced by those differentiated skins carefully constructed by the authorities for the Olympic Games.

The question is whether these *differentiated facialities* and tessellations of the spherical envelope correspond simply to a strategy to reinforce the impermeability of the building envelope as a membrane of immunity and insulation while representing an ideally differentiated public or whether they are genuine devices to proliferate the *faciality* of the envelope and allow it to relate to a much larger variety of concerns, environmental, social, economic, etc. Also of concern is whether they inflect in response to multiple agencies and incorporate specificities, rather than resorting to the mere production of political *affects*, spectacular embodiments of the *phantom public* of global capitalism.³⁷

Because of the contemporary proliferation of agencies in contemporary politics, it is no longer sustainable to hold to the ideological assumption that a more regular or a more differentiated pattern, one more permeable or more closed, is better at representing a certain society and the production of transformative effects. The political accuracy of a certain envelope needs to be judged in respect to very concrete assemblages. The most interesting envelopes among the iconic Olympic projects are probably those in which the architects have succeeded in creating a plausible alibi for the differentiated pattern wrapped around the massive unarticulated volume of the buildings, where a resonance between performance and affect has been achieved. This is where a new discipline of the envelope becomes politically operative, as it is the discipline that can act as a *piece of resistance* without getting caught in the negative project of the critical tradition or in the use of architecture as a mere representation of politics.

36 “We wanted to do something not hierarchical, to make not a big gesture as you’d expect in a political system like that,” de Meuron says, “but [something that for] 100,000 people [is still] on a human scale, without being oppressive. It’s about disorder and order, apparent disorder. It seems random, chaotic, but there’s a very clear structural rationale”. “The Chinese love to hang out in public spaces,” Herzog adds. “The main idea was to offer them a playground”. The Chinese government, they say, has carried out their wishes to the letter. They make a distinction between creating a building that fosters a country’s ideology – say, Albert Speer’s work for Hitler – and one that seeks to transform it’. Excerpts from a conversation between Herzog & de Meuron and Tom Dyckhoff in *The Guardian*.

37 *Phantom public* was coined by Walter Lippmann in his critical assessment of the public within modern democracies as an artificially constructed entity. This work triggered a more optimistic reply from John Dewey about the relations between information and the formation of democratic communities in what has become a famous polemic. Walter Lippmann, *The Phantom Public* (London: Transaction Publishers, 2002).

$X \approx Z > Y$. Flat-Vertical Envelopes. Tight fit.

The flat-vertical envelope, better known as a 'slab', is a category that includes those envelopes that have predominant dimensions parallel to gravity distributed along a line and in which the width of the building is greater than its depth. Flat-vertical envelopes are generated by the horizontal displacement of a section of space, which in order to support a specific function, optimizes density, daylight, ventilation, structural constraints and the building's relationship with public space and infrastructure. Land-uses and orientation are also important drivers for this type of envelope. We can probably include within this category most mid-rise residential and many office buildings as they respond to the need to host a large volume of homogeneous program. The flat-vertical envelope is primarily determined by the façade-to-façade or façade-to-core depth, hence its laminar organization.

Modern urban fabrics tend to be predominantly matrices of flat-vertical envelopes combined in various configurations and suited to a particular climate, use and culture. For example, the façade-to-façade depth for office buildings will vary from 12 to 36 meters (approximately 40 to 120 feet) or more. In Germany and the Netherlands, glass-to-glass depth is limited to less than 15 meters (approximately 50 feet) in order to enhance daylight and natural ventilation. In the US's energy-intensive culture, the façade-to-core dimension of an office building will usually require more than 15 meters because of a tradition of an artificially controlled working environment and the demand for higher flexibility and compactness. In residential buildings the façade-to-façade depth will vary between 9 and 24 meters (approximately 30 to 80 feet) depending also on the access system (double loaded or single loaded corridors) – which is also determined by cultural uses – and residential typology (double or single aspect).

The flat-vertical envelope characterizes the modern city where optimized functional performances have prevailed over the cumulative structure of natural topography, property boundaries, territorial limits and community thresholds and float in the resulting *tabula rasa*. Functionally driven flat-vertical envelopes emancipate from the traditional urban fabrics at the point where internal forces – daylight, ventilation, structure – override the property boundaries and divisions between public and private. In modern housing typologies, where we can find some of the most illustrative examples of flat-vertical envelopes, orientation, ventilation, salubrity, constructive rationality, etc., have taken priority over traditional determinations of the urban fabric such as the alignment to the property boundary and the definition of private and public spheres.

Historically, from Durand to Khrushchev, the flat-vertical envelope has often been associated with political programs and the desire for a new society free from natural and historical constraints and governed by healthy, egalitarian and rational laws. It also relates to a variety of social and cultural performances involving ownership structures and political representation. Haussmann's interventions in Paris deployed flat-vertical envelopes as a wrapping for surgical incisions on the old urban fabric. Gropius and Hilberseimer's orthodox flat-vertical residential typologies exploited the freedom provided by modern property structures – extensive capitalist development or state-driven residential programs – to abandon street alignment and property boundaries and engage with climatic conditions and functional determinations.

The contradiction between the alignment with street patterns and property boundaries – containing and defining public and private space – and the search for an ideal orientation of the units is a classic problem of urbanism. Whether the residential units are contributing to the legibility of the community structure or to the optimization of the units' environmental performance, it is the physical constitution of the envelope that plays a crucial political role.

The flat-vertical envelope opens up a gradation toward a structure of publicness and ownership that was unavailable within more traditional urban structures. Its position within the urban field affects structures of both representation and property and determines the limits between open public and private spaces. The traditional 19th century *bourgeois* urban block, for example in Barcelona, illustrates the conflict between the envelope's cultural and political performance and its environmental capacity. The flat-vertical building envelope is often deployed as a border between communal open space (courtyards or backyards) and public open space (streets or plazas), forming a threshold between public and private space and establishing the *faciality* of the building, its significative structure within the city. The Barcelona block – like many other 19th-century urban extensions in Europe – was achieved by bending a flat-vertical envelope to align with a property boundary. This operation is a legitimate disciplinary challenge: the consequent loss of daylight and ventilation in the corner areas and the surrender of the ideal orientation of the units to the role of structuring the border between private and public is a well documented technical

Gifu Kitagata Apartments, Gifu Prefecture, Japan. Kazuyo Sejima and Associates.



problem. Each side of the envelope is treated differently: the external face focuses on the expression of the buildings, their signification and the provision of *active frontages* while the internal face is primarily driven by functional constraints of solar shading and ventilation. *Siedlungen*, *Höfe* and *Mietskasernen* are additional examples of the problematic relationship between the flat-vertical envelope's functions as an environmental membrane and as a surface upon which urban representation is inscribed.

In Le Corbusier's City for Three Million Inhabitants the paradigm of the *high-rises in the park* aimed to defuse any hierarchy of open space, erasing the presence of the site's property boundaries: all land is public space and there are neither frontages nor backyards. The dramatic failure of Pruitt-Igoe, Toulouse Le-Mirail, and the Bijlmermeer – as well as many other examples of this envelope typology applied over urban grounds no longer affected by traditional property structures – derives from their inability to estimate the impact on the municipal economy of maintaining such large amounts of public space. Most importantly however, their failure can be traced back to the absence of a *faciality* structure that would make these complexes understandable: there is neither front nor back but rather a deliberate attempt to avoid addressing the signification of the buildings and their role within the construction of a public realm. In the most accomplished examples the envelopes are distributed across the site seeking the best orientation for the units and the right distances between volumes to avoid blocking the sun from each other.

As an envelope type that accounts for the majority of today's collective urban dwellings, the flat-vertical envelope lies at the crux not only of how the population of the contemporary metropolis is lodged, but also how it perceives itself in relation to the city and to the public realm. Is the contemporary city a locus of social integration or a mere device for the co-habitation of culturally diverse populations? Is social integration necessarily achieved by the submission to a series of common protocols and laws or is it possible to form an urban culture made of exceptions through a public endorsement of difference? How does an increasingly differentiated urban population respond to locally defined iconographies, environmental specificities and lifestyle patterns? These are some of the crucial opportunities for political performance that we can find today in the flat-vertical envelope.

The most active surfaces in the flat-vertical envelope are the vertical surfaces where technical requirements to insulate, ventilate, light or shade collude with representational concerns. During the first half of the 20th century, the collective residence adopted a monumental language in order to represent the emergence of new communities of the urban proletariat, such as in the Red Vienna Höfe or the Stalin-era housing complexes in Moscow. By contrast, modernists sought to recover transparency between the function and the face: the Unité d'Habitation and the Lake Shore Drive Apartments represent two alternatives to the idea of modernist transparency. While the Unité d'Habitation explores cellularization as a modular system of individual units, Lake Shore Drive submits to the repetitive rationality of industrial production, resulting in an envelope that prioritizes the unity of the container over the identity of the units, although modularity remains. Le Corbusier expresses the modular nature of modern culture, emphasizing the independence of the inhabitants, while Mies expresses a new collectivism based in production through constructive rationality. Neither needs to resort to applied languages, but to an *explicitation* – Sloterdijk's term – of the cellularization of habitations or the modularity of the new industrialized production of collective residence.

After the post-modern revival of the envelope as a surface of inscription and representation, we witnessed during the 1990s an attempt to use the skin of the residential building to represent diversity and multiculturalism through a literal embodiment of social collage. In this paradigm individuals are different and can no longer be represented by a homogeneous, repetitive tessellation of the façade, either by expressing cellular units or in the modular nature of the envelope's manufacture. Dutch architecture became the epicenter of this experimentation, capitalizing on a local tradition of cultural tolerance and multiculturalism as well as large housing construction programs. The Dutch case is exemplary not only because it was where the industry was more active, but also because of a Calvinist tradition of engagement between the residential typologies and the urban space that continues up through *Big Brother*, a quintessentially Dutch invention. Dutch traditional housing has consistently blurred the boundaries between the private and the public: large windows on the ground level are supposed to be left open for the public to keep an eye on the private activities of citizens, while the traditional Dutch front window comes with a projecting mirror for comprehensive surveillance of the public space.

In this sense some of the work developed in the Netherlands in the 1990s indexes an interesting position both with respect to the Dutch tradition of transparency and as the embodiment of the new paradigm of a global culture of individualization and

Silodam Apartments, Amsterdam, The Netherlands. MVRDV



mass customization. MVRDV's Silodam and West8's Borneo Sporenburg in Amsterdam are some of the most paradigmatic examples of this phenomenon. In these projects, units are differentiated in order to provide a diversified product for a differentiated population and the differences are intensified by color-coding them, for example, so that the ensemble becomes a patchwork of forms and colors, a graphic image of a multicultural, global community. The Calvinist literal transparency has been replaced by an artificially enhanced one that intensifies difference as a cultural statement. The idea of a fragmented, ideally diverse population brought together under the collective umbrella of a modern, multicultural society is at the origin of these envelope strategies. The arrangement of colors and spaces in this work may affect people's feelings and actions and encourage individualism as opposed to modernist cellularization. But then again it may only encourage residents to act as a conformist, homogenous herd united by an illusion of individualism. In the antipodes of the patchwork approach we have Némausus, the experimental housing designed by Jean Nouvel in Nîmes in 1987, where a totally homogeneous system of double-aspect, loft-like spaces is proposed under the idea that a bigger home is a better home. The Gifu Housing by Kazuyo Sejima or the VM housing in Orestad by PLOT are intermediate alternatives that explore different possibilities between repetition and differentiation. Yet isn't it consistency rather than difference that contemporary global communities need to build across coexisting cultures? The future of multiculturalism and diversification in the post 9/11 age is open for consideration and there are reasons to believe that the politics of the globalized world will be moving toward the enforcement of sameness rather than difference as the fracturous nature of multicultural societies becomes apparent. Europe is a particularly interesting case in this respect: both the French ban on religious displays and the project of 'Britishness' are exemplary of the overcoming of fragmentation as a viable aesthetics to regulate contemporary politics. The *French law on secularity and conspicuous religious symbols in schools* was passed by France's parliament and came into effect on September 2nd, 2004, at the beginning of the new school year. At approximately the same time, Trevor Phillips, then the chairman of the Commission for Racial Equality in the United Kingdom, stated in a controversial interview in *The Times* on April 3rd, 2004, that multiculturalism was outdated as it encouraged 'separateness' between communities. As an antidote he called for a greater emphasis on integration stating, 'We need to assert that there is a core of *Britishness*'.³⁸ Against the naïve celebration of the 'United Colors', multiple identities and their juxtaposition in a cultural collage, Phillips points to the necessity of applying strategies of consistency and convergence to replace the multicultural policies of the 1970s.

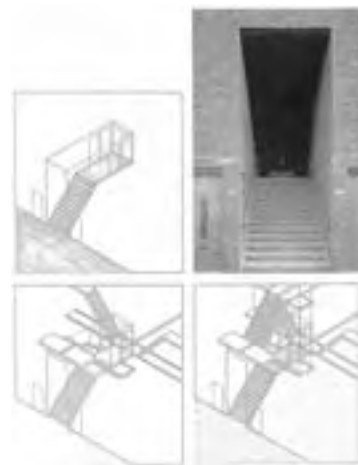
The project of *Britishness* is remarkable because it seems to return to a pre-global model of cultural identity: the nation. This construct requires certain values grounded in history and the update of previous models of 'primitive' national identity, a series of operative criteria aimed at establishing minimum common denominators across diverse populations. But in order to be effective it will also require a continuous update to protect its inherent historicity from potential utopian or static formulations.

An interesting debate in this respect took place at the Berlage Institute circa 1990 between Alvaro Siza and Hermann Hertzberger regarding the project that Siza had just completed in the Schilderswijk Ward in The Hague. This was a decade before September 11th and the murder of Theo van Gogh by a deranged Muslim fundamentalist. Both Siza and Hertzberger were totally innocent of political conservatism: Alvaro Siza was a veteran of the Revolução dos Claveles and Herman Hertzberger was known as the paladin of Montessori education. Siza explained in his presentation that most intended residents were to be from the large Muslim community in the Netherlands and that he had devised an ingenious mechanism that used a movable partition to enable Muslim families to split a private area within the unit where women could hide from male visitors. After Siza's presentation Hertzberger replied that public housing in the Netherlands should not support social habits that run counter to Dutch morality and its belief in gender equality. The construction of an additional layer of concealment inside the domestic space is certainly very alien to the local spirit of Dutch cohabitation. Was the exfoliation of the private/public threshold to the inside of the unit a politically advanced decision, appropriate for a tolerant, multicultural society to embrace? Or was it a sign of unacceptable political behavior that defies the most basic definitions of human rights? Incidentally, this building includes other features that are more agreeable to local customs such as very sophisticated pedestrian access to the units that further develops the Dutch tradition of walk-up residences and the use of the Amsterdam School's local brick and fenestration, an intensification of local architectural traits as identity engines.

Resolving the contradiction between the domestic protocols of the multiple cultures that populate the contemporary metropolis is nearly an impossible task at

38 "What some minorities have to accept is that there are certain central things we all agree about, which are about the way we treat each other – that we have an attachment to democracy, that we sort things out by voting not by violence and intimidation, that we tolerate things that we don't like. Short of people menacing and threatening each other, we have freedom of expression. We allow people to offend each other". Trevor Phillips in *The Times*, April 3rd, 2004. Phillips endeavors to illustrate with paradigmatic precision the complexities of contemporary cultural politics: his statements triggered a virulent reaction from the traditional left which accused him of trying to kill multiculturalism or of being a racist. After the demonstrations against the Muhammad cartoons, he requested Muslims wanting to live under Sharia law to move out of the UK, but defended the rights of local Imams to criticize homosexuals, locating *Britishness* beyond the traditional categories of political discourse.

Schilderswijk apartments, Den Haag, The Netherlands. Alvaro Siza.



the level of political discourse. This is proof that architectural devices may have greater potential for shifting political impasses than do traditional ideological or discursive practices. If the French ban is probably best represented by a Gropius block, 1990's Dutch residential projects are a perfect intersection between the Calvinist logic of transparency and the ideal model of a global culture that celebrates differences, while a possible embodiment of the *Britishness* discourse is implicit in Hertzberger's critique. Siza's option can provide consistency across cultures without having to make the choice between an irreducible multicultural collage (Dutch patchwork residential architecture) or the enforcement of a core of cultural identity (Hertzberger's critique). It enables a higher variation of private/public thresholds within the envelope; this may serve to restrict private areas of the unit or enable a variety of alternative purposes. Like the best examples of flat-horizontal envelopes, the Schilderswijk project is capable of detaching the inside/outside of the envelope from the private/public boundary, producing a richer gradation of conditions across those dichotomies. The reason why it is difficult to find a corresponding political enunciation of Siza's typology is because it is *politically incorrect*.

Z > X ≈ Y. The Vertical Envelope. Slim Fit.

The final category of envelopes is that with a predominantly vertical dimension and, unlike the flat-vertical type, a multi-directional orientation in the plan. The specificity of this envelope category is an intense relationship between physical determinations and performances. Because of its scale and technical complexity, functional and environmental performances such as daylight ingress and natural ventilation need to be maximized, while the formal qualities of the envelope play a crucial role in the building's structural stability. The vertical envelope's geometric determination crucially impacts both the spaces that it encloses and its surroundings. In addition, the visibility of the vertical envelope makes it particularly conducive to iconographic performance. If in the spherical envelope the gap between representative and environmental performances reaches a maximum, in the vertical envelope both sets of performances are at their highest level. The collusion between extreme technical performance and high visual impact produces the maximum tension between efficiency and expression, a condition that runs deep in the history of this building type.

Political stakes are high for this building envelope type as it is one of the most active sectors; according to Emporis, 40% of the world's high-rise buildings – buildings above twelve stories – have been built since 2000 and around 8% of the world's stock of tall buildings is under construction right now. If tall buildings have traditionally constituted a statement of urban power and prestige, their sudden proliferation is now paradoxically connected to a process of urban democratization. There is an irrepressible trend toward the densification of existing urban centers as the planet's human population flees to urban cores where already over half of the world's population now lives. The pressure on urban land and infrastructure this process is triggering will require more intensive land use in order to allow migrants to settle in cities and a high density of construction is probably the most effective solution. Examples of this democratization of the high-rise city can be found everywhere from London to Kuala Lumpur, Moscow to Panama, Dubai to Madrid. Once the preserve of the most rich and powerful inhabitants of the world financial centers, tall buildings are no longer an expensive extravagance but a crucial development vehicle engaging the middle classes. In this process of democratization the high-rise has exceeded its natural milieu as a workspace and pervaded all aspects of urban life: the most high-rise-intensive city in the world – Benidorm, Spain – already has one high-rise building for every 180 inhabitants. There is even a high-rise cemetery, the Memorial Necropole Ecumenica III, in Santos, Brazil. Paradoxically the opposite phenomenon is also true: high-rise buildings continue to be seen as a symbol of urban power, exclusivity and uniqueness. The political performance of a high-rise largely depends on the articulation of this dichotomy, either as a device for the democratization of urban life or for the consolidation of the urban elite.

The vertical envelope lies at the intersection of the global processes of densification shaping contemporary urbanity and increasing cultural and environmental concerns, often driven by local pressures. As the level of investment these structures require is often linked to global economic progress, foreign investment and migrant populations, the typology has become an ideal battleground between big global business and local urban activism. As a result, the vertical envelope has started to move away from the generic extrusions which optimized technical and economical performance during the second half of the 20th century to develop a wide range of local variations in both its geometrical definition and its architectural expression, usually driven by more populist and iconographic concerns.

The conventional high-rise envelope has conventionally been primarily driven by economic purposes resulting in the extrusion of a floor plate and a structural grid derived from internal efficiencies of construction technology and program. However the current urban core densification is reviving the monumental drive for high-rise construction. Tall buildings are paradigmatic of the representation of power in the city, be it that of a corporation, a city or the might of a political regime. This is most visible in a series of image-driven high-rises that once again seek to play an urban role through iconicity. For example, in London there is a series of iconic skyscrapers that have immediately been given nicknames: The Gherkin (Foster's 30 St. Mary Axe), The Shard (Renzo Piano's tower in London Bridge), Helter-Skelter (Kohn Pedersen Fox's Bishopsgate Tower), and Walkie-Talkie (Rafael Viñoly's design for a tower on Fenchurch Street) among them. In New York, where simple extrusions were the norm, the Twin Towers' unapologetic simplicity is being replaced by the more complex profiles of buildings like the Freedom Tower and Hearst Tower. Two recent competitions, for the Tour Phare in Paris and for the Gazprom Tower in Moscow, are paradigmatic of the representational role that vertical envelopes have acquired within contemporary processes of urban development.

Although the configuration of the skin does not play as important a role as in

30 St. Mary Axe, London, UK.
Foster + Partners



the spherical envelope due to the perceptual distance resulting from the scale of the typology, an elaborated, graphic skin has become an economical device to respond to the market demand for uniqueness. In other cases the manipulation of the envelope's crowning, where the technical determinations are weaker, is the technique to distinguish buildings otherwise designed as mere extrusions of an optimized footprint. The deployment of an iconic image on the envelope is probably the most radical version of this search for significance within the contemporary vertical envelope: the tiered pagodas of older Chinese architecture in the Jin Mao Tower and the image of gold ingots used in Taipei 101 are the most prominent examples of this totemic approach.

A more nuanced alternative in the design of vertical envelopes to the one-off iconic extravagance aimed at the pure representation of power is the correlation of technical efficiencies and symbolic performance. The deployment of images that resonate with local iconographies or figurations as geometrical determinations can set in motion a productive engagement with environmental or structural efficiencies of the envelope: the rotated square footprints of Asian Muslim towers in the case of Petronas offer an increased façade ratio by striating the skin of the building. The desert flower in the case of Burj Dubai provides a geometrical basis for the three tapering buttresses that lower the center of gravity.

Representation is an important part of the vertical envelope and those who fail to take it into consideration have been sometimes punished for it: Kohn Pedersen Fox's Shanghai Hills World Financial Center, which in an earlier scheme featured a round hole at its crowning, suffered a last minute redesign to incorporate a square opening, since the circle was deemed too reminiscent of the Japanese flag. Owned by the Japanese Mori Corporation, its image had to be altered to avoid offending the locals with a monumental manifestation of Japanese power.

Yet these epithelial, graphic and iconic treatments, unlike Hugh Ferriss' setbacks for daylight, Louis Sullivan's ornamented ceramic panels for fire-protection or Fazlur Khan structural *diagrids*, are the epitome of a schism between technical efficiencies and political representation (as the contemporary inner-city high-rise is inevitably a location of power) which disables the discipline's political agency. The expressive layer that some of these buildings adopt is not alien to the history of the vertical envelope, but the tension between efficiency and expression in the design of tall buildings has never been greater than it is now. If we follow the logic of *explicitation* that Sloterdijk proposes as a political program of modernity, the iconographic treatment of the vertical envelope would act as a cover-up for the technical or social processes taking place.

The most common approach by avant-garde architects in the design of high-rises is to challenge the conventional, to produce the unique, to be revolutionary. Instead, the proposition here is that the most effective approach to mobilize the political in the vertical envelope is to express the efficiencies of the current demand for urban density and high-rise construction. The most crucial task of a politically engaged vertical envelope design may actually be to give new expression to the most generic efficiencies of a high-rise city, to simply make visible the processes that drive its formation. The search for the contemporary *high-rise phylum*³⁹ is a project of *explicitation*.

There are a number of parameters that affect the processes of high-rise construction that are increasingly obscured by the drive toward the iconic high-rise. To convert them into physical tropes, to make them physically evident and to give them expression would perhaps be the most critical political program for the vertical envelope in an age when virtually anything is technically possible. The efficiencies of the vertical envelope range across a set of parameters that embody local specificities, for example climatic conditions, lifestyle, trade protocols, and market demands:⁴⁰ program-driven façade-to-core dimensions, environmentally-driven façade and fenestration ratios, market-driven population ratios, compliance with certain models of structural efficiency and procurement systems... As the envelope increases in visibility and iconographic potential, so do the environmental and structural demands. It also increases its potentials for views and solar exposure. As a result of this intensification of the environmental parameters the vertical envelope is becoming increasingly complex and anisotropic. It is reacting very specifically to the surrounding urban context with specific inflexions that provide views, solar exposure, natural ventilation and profile. The envelope in this case not only affects the interior space but it also has a massive impact on its urban surroundings. The intensification of technical and economic demands coupled with the demand for environmental efficiencies can be expressed in a more inflected envelope producing a more intense physical relationship to its surroundings which will move beyond the iconic and the graphic.

Looking at some of these processes now taking place which may be *explicitated*, probably one of the most important is the strong global tendency for tall buildings

39 See my 'High-Rise Phylum 2007' in *Harvard Design Magazine* n. 26 (2007).

40 The analysis of residential high-rise typologies across a global geography displays the wide differentiation across cultures and climates. For example, in a prototypical residential high-rise development in Dubai, the average façade ratio would be around 0.45 square meters per indoor square meter, in London 0.50 square meters per square meter, in Miami 0.55 square meters per square meter, in Seoul 0.60 square meters per square meter, in Kuala Lumpur 0.75 square meters per square meter and in Hong Kong 0.85 square meters per square meter. This parameter relates the financial and environmental implications of an envelope design: if the ratio is high it means greater capital expense; if it is low daylight and ventilation may need to be artificially supplied therefore generating higher maintenance needs and costs.

Benidorm, Spain. One high-rise per 180 inhabitants.



Floor plans of a Hong Kong residential tower showing a highly inflected envelope.



in residential markets. This tendency is one of the most interesting forces behind a more articulated and diverse vertical envelope. As a result, the high-rise envelope is now evolving toward a re-engagement with nature, away from its original milieu, the artificial environment of workspace, and toward an integration of the tall building with the patterns of residential use.

Because of its engagement with domestic protocols and specific climatic conditions, the vertical envelope is now producing culturally-specific, vernacular varieties. There is a direct relationship between the geometry of the envelope, the local climate and the local culture: a higher façade ratio implies more daylight ingress and natural ventilation but also more heat loss, while a more compact envelope implies a more artificial environment. For example, a residential tower in which the wet rooms are required to be adjacent to the façade will consume a much larger amount of the façade than a building with internal, mechanically-ventilated kitchens and toilets. The former will have a strong link with the outside, while the latter will rely primarily on an artificial environment.

Contemporary high-rise residential envelopes across the globe are radiographies of cultural hybridization and the synthesis of local variations. There are deep cultural and political implications of the geometrical determinations of the vertical envelope. For example, in Southeast Asia the residential high-rise has been largely naturalized, while in the West high-rise life is still associated with extreme artificiality. A high level of environmental mechanical control is acceptable in high-rise residential units in the West and the Middle East, while the further we move toward Southeast Asia the more common is the requirement for all rooms to have direct contact with the outside and to be naturally lit and ventilated. In Western models residential units rely heavily on full air-conditioning while in Southeast Asian prototypes natural ventilation and under-floor heating are standard even when air-conditioning equipment is also installed. The argument for this increase in the façade ratio in Southeast Asia is often based on the humidity of the climate but it is more likely the result of certain living patterns that Asian cultures are not prepared to give up even in a high-rise residence. Local cooking has developed kitchens with dry and wet areas; complex systems of service access and entrances into service areas exist within apartments of a certain standard denoting a certain class structure; a culture of bathing while being able to enjoy views and daylight is fuelling some expensive traits of the Asian residential high-rise such as the systematic location of bathing areas on the façade of the building. Kuala Lumpur and Hong-Kong are certainly very humid and when the air-conditioning is turned off there may be problems, but there is no reason to think that temperate zone cities like Seoul or Beijing need very different residential structures from Paris, Manchester, New York or Chicago. Yet in South Korea a high-rise apartment without adequate orientation may see its price halved compared to those with optimum orientation within the same building. The combination of these factors has interesting effects on the resulting geometry of the envelope of the building, effects which tend to produce local species.

Even the tessellation of the skin is affected by cultural differences: a lawyer's office in the UK and most Commonwealth states will consume three meters of façade, while an American lawyer's office will take approximately 3.6 meters. In locations such as London or New York where firms from both sides of the Atlantic share the available space, the selection of the envelope modulation is important and will affect the rhythm of fenestration and the interior planning grids.

If the corrugation of the façade is one of the most powerful effects of this process of democratization and naturalization of the vertical envelope, there are also several possibilities in which the current tendencies in high-rise construction may become explicit in the sectional configuration of the vertical envelope. We can find an interesting example in the correlation between the current tendency to use concrete as structural material for high-rise residential buildings and the preference for pyramidal envelopes. As the residential sector accounts for most of the tall building stock under construction, concrete is surpassing steel as the preferred material for high-rise construction. The ductility and lightness of steel, which gave it an advantage over concrete in the early days of the type, makes it inadequate for residential construction, as it has a level of deflection and sound transmission which are not ideal for domestic environments. Instead concrete structure provides a solidity that reduces deflection and noise transmission and provides more thermal inertia for the building. Consequently, the construction industry has geared up to produce concrete construction technologies able to deliver high-rise buildings efficiently. Slip-form construction systems have now accelerated the rate of construction to one floor every three days, which makes it basically equal to steel construction up to 50 story buildings. Beyond this threshold concrete structures become problematic for very tall buildings. In response, the building mass has become a crucial structural device for concrete

Ryugyong Hotel, Pyongyang,
North Korea.



construction in tall buildings: there is a generation of mixed use super-high-rises being built with a spire-like envelope optimizing the structural use of the building mass. Tapering the envelope toward the top produces a higher structural section and moment of inertia in the lower sections of the building, making the form coincident with the stress diagram of a tower. Burj Dubai is probably the best example of the return to an almost gothic type of structure; Renzo Piano's Shard in London, Jean Nouvel's MoMA Extension Tower in Manhattan and Norman Foster's Russia Tower in Moscow also respond to this tendency of partially residential towers in which the shaping of the envelope carries crucial structural efficiencies that have been made *explicit* by the use of a pyramidal envelope.

The pyramidal shape, which has traditionally been an icon of stability and hierarchy, has now become an expression of high-rise domesticity, a new earthiness, as if the high-rise lineage was becoming increasingly grounded. Both the Ryugyong Hotel in Pyongyang and the Petronas Towers in Kuala Lumpur are extreme examples of the political role that vertical envelopes may play in representing a political regime; both feature pyramidal sections. William Pereira's Transamerica Pyramid in San Francisco now hosts the headquarters of the Church of Scientology and OMA's CCTV building in Beijing is chiselled out of a pyramidal envelope. OMA's CCTV competition model had Egyptian-like low-reliefs as if it were a remainder of some gutted-out pharaonic monument.

Commercial determinations are also producing substantial distortions of the extruded vertical envelope, but in exactly the opposite direction. As height becomes a desirable commodity, there is a growing disparity in the rental values on different building levels. In a commercial high-rise, the lower levels are desirable because of their proximity to the street (for retail or high density uses like trading floors). Upper levels are desirable because of their views and isolation from street noise. In residential high-rise buildings as the value per square meter increases with each floor it is common to have fewer, larger apartments for buyers with higher purchasing power. Therefore the larger the floor plate becomes at the higher levels, the more valuable the building becomes. There are also several examples of contemporary high-rise projects in which this commercial logic has been mobilized to produce an aesthetic effect of instability. The structural and commercial logics seem to be operating in opposite directions in the vertical envelope, opening unexploited potentials that will produce effects of stability or instability depending on the vertical envelope's massing. The effects of the buildings may then become an explicitation of certain efficiencies, whether structural, technological, programmatic or commercial, and the problematization of these efficiencies becomes an interesting political field.

The sheer scale of some of these building complexes is another new parameter to address in the design of vertical envelopes. The simultaneous thirst for critical mass and synergy that drives the dramatic increase in scale of these typologies is leading several projects toward a configuration of interconnected towers capable of providing adequate daylight while exploiting synergies across ever growing concentrations of urban activity. OMA's Togok Tower, Louisville Museum Plaza and CCTV projects have been designed as 'an alternative to the traditional diagram of the super-high-rise' and to 'avoid the isolation of the traditional high-rise'. They are excursions into the unprecedented scale of some contemporary high-rise projects. Our own Bundle Tower, a project for the Max Protetch show "A New World Trade Center" was an attempt to develop a structural concept for a new generation of super-high-rise buildings aimed at turning the fragmentation of volumes that becomes almost unavoidable in projects above 300,000 square meters into a structural advantage. The sudden proliferation of these branched versions of the vertical envelope indexes the convergence between certain efficiencies in the design of very large complexes and the emergence of the image of a network, that most contemporary icon.

All these parameters, often ignored when discussing the merits of high-rise projects, constitute the material grain of the contemporary high-rise phylum. Vertical envelopes constitute a field of convergence between the physical, the technological, the perceptual and the symbolic, an important political performance. One of the most important possibilities is obviously the development of more environmentally conscious envelopes; for example, by increasing the façade ratios – at the price of higher capital costs – we can largely avoid mechanical ventilation and artificial lighting and generate energy savings and carbon emission reductions that may have important political effects. Beyond their renewed aesthetic hipness, tall buildings offer a high-density model that helps preserve the green belt from the ever-expanding suburb and has a smaller ecological footprint than alternative urban models. The ecological superiority of the *culture of congestion* and the green credentials of the elevator core as an alternative to the gas-guzzling six-lane highway are becoming universally accepted facts and this gives the vertical envelope type an initial advantage.

Burj Dubai, Dubai, UAE, under construction. Skidmore, Owings and Merrill.



But the environmental impacts of these structures, their relationship with infrastructure and public space, their imposing presence and most of all the scale of resources and development procedures that they imply poses serious questions about their implementation.

In this sense, the current demand for spectacular high-rises⁴¹ runs exactly in the opposite direction of what we can describe as a phylum of the vertical envelope or in other words what Sloterdijk proposes as a process of *explicitation*. The current search for novelty follows the 20th century's tradition of revolution or emancipation in which truly significant facts need to radically transform the real. On the contrary, what we believe is politically relevant regarding the vertical envelope design is the way it can contribute to making certain urban phenomena explicit. Starting with the global process of urbanization and moving toward the densification of the residential fabric, environmental concerns and the technologies developed to enable these processes combine to form a truly engaged vertical architecture capable of making these current processes explicit and turning them into percepts or tropes, like the 'Cool Biz Campaigns' in Japan and South Korea, where the business attire code was changed in order to both implement and signify a new environmental consciousness.⁴²

The spectacular high-rise, the one that is contingent to the phylum, the one that pretends to be novel, exceptional and revolutionary, is exactly the one that contributes most to the maintenance of the power structures. It is precisely the differential departure from the conventional, the permanent flight from the status quo, rather than a radical opposition, that can actually reveal and subvert the dominant urban powers.

- 41 'The current mania for flamboyant skyscrapers has been a mixed blessing for architecture. While it has yielded a stunning outburst of creativity, it has also created an atmosphere in which novelty is often prized over innovation. At times it's as if the architects were dog owners proudly parading their poodles in front of a frivolous audience'. Nicolai Ouroussoff, 'Towers Will Change the Look of Two World Cities' in *The New York Times*, December 4th, 2006.
- 42 Japanese Prime Minister Junichiro Koizumi launched the campaign for the 'Cool Biz' dress code in June of 2005 in order to help save on air-conditioning and reduce carbon emissions. The campaign promoted promoted removing the customary business suit and tie in order to raise the threshold of air conditioning to 28°C (82°F) during the summer season. The South Korean and UK governments initiated the same policy a year later.
- 43 As Manuel De Landa states, it may be necessary to entirely replace the term *Capitalism* by the terms markets and anti-markets in order to be able to address the complexity of the current system of economic integration. Manuel De Landa, 'Markets and Anti-Markets in the World Economy' in *Technoscience and Cyberculture*, ed. Stanley Aronowitz et al (London: Routledge, 1996).
- 44 Examples of this tendency are Zaha Hadid and Patrik Schumacher, *Latent Utopias* (New York: Princeton Architectural Press, 2003) and Martin Van Schaik and Otakar Mael, *Exit Utopia: Architectural Provocations 1956-76* (Munich: Prestel, 2005).
- 45 The emergence of ecological concerns is an obvious example of this tendency which extends to more strictly political arenas. The recent interest within the academy in the work of Antonio Negri and Michael Hardt as a post-post-critical revival of utopian and critical thought and the return to a discourse with explicit political alignments is one of the indices of the current political reawakening within the discipline. 'Meanwhile, utopian realism must be thought of as a movement that may or may not exist, all of whose practitioners are double agents. Naming them, or their work, would blow their cover. (They may or may not all be architects.) Those who could voted for Kerry. (So you, too, could be a utopian realist.)' Reinhold Martin. 'Critical of What? Towards a Utopian Realism' in *Harvard Design Magazine* n. 22 (2005): 104-109.

Epilogue: Some propositions for a directed political ecology of architecture

The question whether architecture and urbanism can or should be critical, projective, progressive or utopian, and whether speculative architecture can remain an effective practice, is still a much debated issue that needs to be addressed in respect to our proposed general theory of the building envelope. The hypothesis of this essay is that progressive architecture has an important role to play today as an instrument capable of producing crucial improvements to urban life and therefore as an instrument of change as well as technical, social and political experimentation. Architecture and urbanism mobilize such a scale of resources that unless the practice is kept at a purely speculative level it is difficult to sustain it without becoming, to a certain degree, an accomplice of power. This is why, in order to regulate its relationships with power, with the status quo and with emergent social structures, a progressive architecture needs to develop political strategies to maintain a relation with power while simultaneously challenging and opening its structures.

The challenge to established power has been traditionally enacted through the proposal of alternatives developed in relation to a certain ideological position. But the crisis of representation and objectivity triggered by modernity and in particular by the advent of globalization has put into question the transformative capacities of ideology and utopia. As an alternative to ideology as a tool for a politically engaged architecture and utopia as its form of representation we have been testing an architecture of *explicitation* – to use the term coined by Peter Sloterdijk – through the analysis of the architectural envelope. Within the model of *explicitation*, political practices are increasingly attached to artificial environments in which we live and with which co-exist, where disciplines become the primary link between humans and non-humans, politics and nature. This model implies structuring the critical mechanisms around spatial and material organizations rather than relying on the great revolutionary narratives and their ideological conceptions of history.

The question then is whether architectural *explicitation* is sufficient for architects to regain a certain level of political agency in order to affect the current processes of urban and environmental transformation. How does *explicitation* discern between the failure or success of policies and designs? How does it ensure an appropriate distribution of power? The uncertainty of these questions is currently provoking a growing nostalgia for the days when there was a coherent political project that could be described through ideology and represented in utopia. On the contrary we are excited by the prospect of moving beyond a single narrative of how the world is or feels, or where it is headed. In fact, it may be good to stop speaking of *power* in general, or of *the State*, *Capital*, *Globalization* in general, and instead address specific *power ecologies* comprising a heterogeneous mixture of bureaucracies, markets, antimarkets, shopping malls, airport terminals, residential towers, office complexes etc., and specific exercises of power within and between these organizations. We may need to avoid abstract notions of power, such as *the capitalist system*, *capitalist power*, *the power of the State*, *Global Capitalism* and *Empire*, and instead focus on specific bureaucracies and economic institutions, and engage in a more concrete analysis of institutional, social, financial and spatial dynamics.⁴³

An interesting occurrence within the political framing of contemporary artistic, architectural and political practices is the invocation of utopia,⁴⁴ as well as the increasingly common resort to *dystopia* as an alternative to the great revolutionary narratives and utopian propositions. The architectural visionary has often been grounded in some sort of epic formulation that provided the practice with political directionality. Recently we have witnessed a resurgence of utopian thinking and even some attempt to re-establish political correctness as a precondition for adequate architectural practice.⁴⁵ As an alternative to the superlative rhetorics of the politically correct, the practice of the *politically incorrect* is an altogether more compelling and transformative practice, if it is directionality we seek. The *politically incorrect* breaks down the consistency of ideological politics and indexes the emergence of micro-politics: Stockhausen's comments in the wake of September 11th,⁴⁶ comparing the attack to an artwork on a universal scale, are an extreme example of political mischief capable of triggering the sort of contradictions that reveal cracks in the fabric of established molar politics. Deployed from a position of power, Donald Rumsfeld's cynical comments on the surgical splitting of Europe into "old and new" and the potential bond between freedom and crime and between military action and pillory⁴⁷ are far more critical (and dangerous) than the sanctimonious ideological rhetoric of his neoconservative colleagues.

Within the field of architecture the *politically incorrect* is a machine for breaking down molar identities into molecular components that can then be treated within the specific realm of the discipline through categories such as difference and repetition, consistency and variation, transparency and opacity, and local and global, rather

46 Asked on September 17th, 2001 at a press conference in Bayreuth for his view of the events, Stockhausen answered that the attacks were 'the greatest work of art imaginable for the whole cosmos'. According to a tape transcript from public broadcaster Norddeutscher Rundfunk, he went on: 'Minds achieving something in an act that we couldn't even dream of in music, people rehearsing like mad for 10 years, preparing fanatically for a concert, and then dying, just imagine what happened there. You have people who are that focused on a performance and then 5,000 people are dispatched to the after-life, in a single moment. I couldn't do that. By comparison, we composers are nothing. Artists, too, sometimes try to go beyond the limits of what is feasible and conceivable, so that we wake up, so that we open ourselves to another world'. Asked further whether he equated art and crime, Stockhausen replied: 'It's a crime because those involved didn't consent. They didn't come to the "concert". That's obvious. And no one announced that they risked losing their lives. What happened in spiritual terms, the leap out of security, out of what is usually taken for granted, out of life, that sometimes happens to a small extent in art, too, otherwise art is nothing'.

47 'Now, you're thinking of Europe as Germany and France. I don't. I think that's old Europe. If you look at the entire NATO Europe today, the center of gravity is shifting to the east. And there are a lot of new members'. 'They're not with France and Germany on this, they're with the United States'. Secretary of Defense Donald H. Rumsfeld, briefing at the Foreign Press Center, January 22nd, 2003. 'Freedom's untidy, and free people are free to make mistakes and commit crimes and do bad things. They're also free to live their lives and do wonderful things. And that's what's going to happen here'. 'Looting is not uncommon for countries that experience significant social upheaval. Stuff happens'. Secretary of Defense Donald H. Rumsfeld, briefing at the Pentagon, April 12th, 2003.

48 "I do not believe in principles... I am a whore and I am paid very well for building high-rise buildings". Philip Johnson lecturing in 1982.

49 Francis Fukuyama, *The End of History and the Last Man* (Free Press: New York, 1992).

50 'The division of things between progressivist and reactionary ought to be abandoned precisely because the topography of time, the repartition of

than through the traditional political categories of class, gender, creed and race. The *politically incorrect* is a mechanism of *explicitation* of latent political potentials that currently remain covered beneath layers of ideology.

Our own invitation to New York to “forget September 11th” in our Max Protetch Bundle Tower statement and its subsequent conversion into an embodiment of “United We Stand” for the “Latent Utopias” show are in no way the result of historical ignorance or a political impasse, but are a calculated short-circuiting of contradictory political discourses by a material organization. Its polemical effect was apparent on both sides of the Atlantic and motivated censorship of parts of our statement by the Max Protetch Gallery in the publication of the book. Our recent re-reading of our own work as a cynical orchestration of a series of populist representational techniques follows a similar political game with a tradition that can be traced back to the famous statement by Philip Johnson comparing himself to a whore⁴⁸ and that has been systematically played by Rem Koolhaas in his serial claims over Atlanta, Singapore, Lagos, Pearl River Delta, Dubai and shopping as the new models of urbanism. Toyo Ito’s Pao for the Tokyo Nomad Girl and Diller + Scofidio’s Soft Sell on 42nd Street in New York are examples of a genre of dystopian politics that is not more common because architects still have to perform primarily as *organic intellectuals*. Rather than rejecting the political in architecture, the attack on political correctness is an attempt to avoid architecture becoming simply a vehicle for political representation and to become instead a viable political instrument. While the *politically incorrect* may be a discursive operation more than a material one, it should not be understood as apolitical but as a powerful instrument to loosen ideology’s monopoly on politics. In combination with the search for alternative political qualities and arenas, the *politically incorrect* may be seen as part of a two-pronged strategy aimed to dismantle conventional politics in order to liberate material organizations from political representation.

While the *politically incorrect* and the *dystopian* are consistent with the project of redefining the politics of architectural practice, they still rely on a strategy of negation. What would be a politically engaged and affirmative practice of urbanism or architecture in the age of global capital? Despite the claims that globalization would terminate history and politics,⁴⁹ within its short history we have already witnessed at least two different eras: the origins of the system during the Cold War and the post-September 11th world order. We may be facing a new change with the collapse of the international credit system. Global capital has simply inaugurated a new breed of market-mediated politics which we are still struggling to embody architecturally.

To define what is a politically progressive or reactionary, projective or critical, revolutionary or service-oriented architecture within global capitalism is perhaps not a very clarifying exercise and probably even condemned to failure as it is aimed at a moving target.⁵⁰ But we can make some hypotheses about what domains, processes and qualities are needed for architecture to acquire transformative agency today, even if it is on a provisional level. The following is a series of propositions that attempt to establish some directionality for an architectural politics of *explicitation*.

Contemporary politics is primarily active within disciplines.

There are a growing number of new forms of political action which herald both the emergence of different political qualities (such as *affects*) and domains (such as *everyday life*).⁵¹ Contemporary politics are giving way to a new wave of powerful material organizations, belongings and attachments, which are literally redefining political space. Both governmental agencies and corporate organizations are moving toward multiple layers of governance with intensified connections between them. We are witnessing the emergence of a heterarchical order which increasingly constructs its power by both producing and using diversity. As a result, the challenge to instituted power can only be selective and a division of political labor has to be addressed by multiple disciplines operating independently and simultaneously and not necessarily in a multi-disciplinary relation. A singular politics of resistance is no longer capable of challenging contemporary forms of instituted power. It is necessary to engage in the political critique of disciplinary problems – such as the one proposed here, the building envelope – in order to acquire transformative agency.

Contemporary politics is physically grounded.

In the globalized world, the communities and interest groups on every project have proliferated enormously and communication technologies have become so ubiquitous that representation and symbolic reasoning have lost substantial efficiency as political mediators.⁵² The new political forms are shifting away from stasis, but also from representation, dialectics, words and time toward material and spatial organizations, populations and intensities and are crucially invested in the modes of production and exchange.

political passions, has been overturned. Because in modernism, we were relatively easily oriented towards a progressivist direction. So we could distinguish between progressivist and reactionary attitudes with relative ease, reactionary being linked to the attachment to the past and progressivist to future emancipations. Today, however, things have changed to the extent that attachments are not only in the past but also in the future. For example, ecological questions, issues concerning the city and urbanism etc. We have gone from a time of Time to a Time of Space, from a time of succession to a time of co-existence. As a result the differentiation is now based on the type of attachment rather than on the old reactionary and progressivist scenography. So we are obliged to change the political passions while they still remain relatively classic, attached to the whole package of progressivist/reactionary, liberal/neo-liberal, anti-globalizing/globalizing. In effect, in the details, we have to open the package to understand the allocation of attachments and the dose of emancipation and attachment they presuppose... On the contrary, politics turns around objects of interest, “issues”, “affairs”, “things”, *αἰτία* in ancient Greek. So it is of no importance to know whether one is a reactionary or not, but to know what those objects are that one holds dear, and the types of things to which one is attached’. Bruno Latour in conversation with Konstantin Kastrissianakis for *Re-public*.

51 For a critique of *affects* as an essentially contemporary political modality that overcomes representation as a more traditional political form see Thrift, Nigel *Non-Representational Theory. Space, Politics, Affect*. London: Routledge 2007

52 “Politics will become what he (Sloterdijk) calls ‘spherology’ which is about the habitats, artificial environments, artificial surroundings in which we are and co-exist. In arguments of this type, it is true that the central metaphors tend towards space rather than time. They are formed primarily in architecture and in co-existence rather than in the great revolutionary narratives that reigned for centuries in their left or right versions of history. Sloterdijk proposed another more interesting term to replace that of revolution: ‘explicitation’. The history of explicitation is made increasingly intelligible in the spheres and objects to which we are attached. Therefore the problem is not to order things according to time or space. It is no longer hierarchical but heterarchical. Rather, today we must try to approach these new attachments, these new political passions. The categories

In the light of this, the possibility of a form of politics extensible to non-human entities and interested in engaging with the transformation of reality, as opposed to a form of politics driven by representation and judgment, is critical to attain political agency. While traditional political practices were based on discursive forms, identities and dialectics and were subject to the permanent need to envision parallel realities and all-encompassing systems, contemporary power structures operate as physical aggregates where behavior is created through the localized complex association of molecular components, hence the importance of attaching political content to a certain type of material organization, such as the building envelope. The typological classification of envelopes and their political attachments that we are proposing is an attempt to create a related discipline. This *Politics of Things*, or *object-oriented politics*,⁵³ runs in parallel to the development of alternative models of *physically grounded*,⁵⁴ *produced* intelligence (also called behaviorist AI) than to symbolic reasoning and representation. The AI models for this operative system are *distributed computing*, *subsumption architecture*, and *object-oriented software*, all of which are forms of artificial intelligence that operate by breaking down intelligence into molecular, concrete components that relate independently to external inputs, collaborating with or canceling each other depending on the particular assemblage and specific location.⁵⁵

Another relevant case of how the politics of cultural production has evolved under the effect of globalization and digital technology can be found in the culture of contemporary electronic music: as opposed to *rock'n roll*'s revolutionary individualism, the culture of *techno* has neither an overt revolutionary aspiration nor a utopian formulation. It operates within the system.⁵⁶ In order to do this *techno* music replaces more traditional musical figures – melody and harmony – with texture and rhythm, as primary forms of expression. The image of the *rave*, a collective environment capable of mobilizing crowds of people into a single rhythm appears to be a perfect incarnation of associative democracy as a coexistence of heterogeneous populations and informal associations. The production of political affects through material organizations is, as in the example of contemporary electronica, a critical potential of architecture and is particularly relevant for building envelopes.

The global market is the primary milieu of contemporary architectural politics. There are two basic forms of political structures that have historically organized the exchange and flow of resources, skills and command structures in time and space: markets and bureaucracies.⁵⁷ They are the two domains where architects may try to construct their agency. Within the global economy the market has become predominant as a mechanism of organization capable of integrating a larger number of agents in its processes within a shorter time. Bureaucracies are organizations of power which are based on a hierarchical totality operating in stable conditions for extended periods of time and can hardly survive the pace of change and level of complexity required by a global economy. While within bureaucracies the agents and their relationships are fixed over time, markets are organizations that organize power through a complex and constantly changing set of agents and factors. As the form of political organization better suited to integrate ever expanding domains, the market is a powerful force behind the failure of ideology and utopia as effective political devices, as they would require a centralized power if they were to be implemented. The market is probably a better milieu to articulate the current proliferation of political interests and the rise of *micro-politics*.⁵⁸ This should not be mistaken as an *invisible hand* approach. In fact, intervention is possibly needed more than ever, but it is only effective if mediated through the market. The traditional opposition between State and Capital is no longer effective once the degree of integration between them has reached the current levels. The rise of sovereign funds and the injection of cash into the market by central banks to mitigate credit problems are present-day examples of how bureaucracies are now embedded in the market, with their primary role having been transformed into market regulators, precisely to fight anti-market forces. No matter how devious the rules of the global market may be and how great the level of bureaucratic control needed to avoid catastrophic effects, for architects to reacquire political agency today it is necessary to engage with the market as the most important medium of power distribution within the global economy. Those advocates of ideology who hope for a return to a state-driven, ideologically-enlightened society as a remedy to the miseries of the market economy and as an alibi for the reconstruction of a representative, significant, even utopian architecture would do well to remember the miseries of bureaucracies and consider how possible institutional interventions can be channeled through the huge machine of the global markets to prevent them from becoming sclerotic. The greatest advantage of markets in respect to bureaucracies and ideologies is, precisely, that they are unstable.

of the French revolution, the left and the right, with their specific categories and particular techniques of classification, of positioning, no longer correspond to the order of things. Whether we talk about global-warming, delocalisation, GMOs (genetically modified organisms), habitat or public transport, there is each time a different configuration of these positions. It is not that these divisions no longer exist, but that they have been drowned in the multitude of other attitudes”⁵⁹. “Politics always was object-oriented. It is simply that in the modernist scenography, where politics was one sphere amongst others, such as those of civil society, economy, nature, we were under the impression that we could define politics in a procedural manner. An arena through which all kinds of affairs could pass but representatives would treat them in such a way so as to standardise them. What happens today is that the techniques of political representation no longer seem capable of absorbing the multiplicity of positions and, in any case, they are no longer capable of standardising them”⁶⁰. Bruno Latour in conversation with Konstantin Kastrissianakis for *Re-public*.

53 Bruno Latour and Peter Weibel, introduction to the exhibition catalogue *Making Things Public: Atmospheres of Democracy*.

54 The term is borrowed from Rodney Brooks, a pioneer of behaviorist AI, who has promoted the idea of a *physically grounded artificial intelligence* from the field of robotics as an alternative to centrally structured coded wholes based on symbolic reasoning. Rodney Brooks has argued persuasively against symbolic processing approaches to creating intelligent machines, which had been the focus of AI since the days of Alan Turing, directly tracing back to the work of Gottlob Frege. Brooks' biologically-inspired architectures and physically grounded systems (e.g. subsumption architecture) address basic perceptual and sensorimotor tasks as the basis of intelligence. These had been largely dismissed as uninteresting by the mainstream AI community which was more interested in reasoning about the real world than in interacting with it. Conversely, Brooks argued that interacting with the physical world is far more difficult than symbolically reasoning about it. “There is an alternative route to Artificial Intelligence that diverges from the directions pursued under that banner for the last thirty some years. The traditional approach has emphasized the abstract manipulation of symbols, whose grounding, in physical reality has rarely been achieved. We

Contemporary politics is based on change and imbalance.

In the Western tradition, progressive politics were traditionally associated with an equalization of power across different population groups, such as class, gender, creed and race and their independent identities, for example class equality, gender equality, racial equality and religious tolerance. It is becoming apparent that those allegedly progressive political principles of Western democracies (equality, indifference, submission to the will of the majority, etc.) are becoming an unwanted export among cultures that are perhaps more prone to either informal associations (such as mafias, tribes or families) or hierarchical bureaucracies. The wars in Iraq and Afghanistan, the resistance of China and Russia to submit to Western political standards and the emerging resistance to Western models in Latin-America are examples of a certain cultural friction between ideal models of Western democracy and models of governance implicit in cultures driven by more informal associative principles. Even in the West contemporary politics are already reacting to the new economic and technological order by opening forms of political activism that have moved away from parliamentary democracy toward a multiplicity of agents, vehicles and *fori*.⁵⁹

It is precisely change and imbalance that constitute the most powerful engines of creativity today, while the traditional form of political ideologies and utopias is a static organization, whether hierarchical or horizontal. While a parliamentary democracy is characterized by a partial empowerment of everybody, one of its best qualities as a political system is that it produces a regular revision of power structures. The proposition here is that progressive politics today is enabled through dynamic disequilibrium, not static evenness. Rather than a politics of indifference, independence and evenness, progressive politics promote connected unevenness, inducing difference and interdependence. And this is where architecture's material mediation becomes crucial for updating political models, as we saw in the example of Siza's Schilderswijk Housing in The Hague. The building envelope is critical for establishing a homeostasis between the internal environment of the building (and the community that inhabits it) and the environment outside and other neighboring envelopes, hence its importance and the relevance of designing envelopes capable of regulating flows in and out of spaces and through changing conditions.

Political directionality is a property of systems guided by a concept of history and nowhere is history more evident than in the dynamics of economic power, where the capacity to manipulate the prices of inputs and outputs of the production process as well as their supply and demand produces a continuous fluctuation and evolution of markets. The contemporary paradox is that even if history has pervaded material organizations, we can no longer rely on the arrow of time as a pointer for an evolution of political systems, but rather must engage the intrinsic qualities of material and spatial organizations to direct and regulate flow and exchange. Contemporary forms of power are generated through the ability to initiate, track or modulate flow with increasingly systematic and sophisticated devices. Networks, flow architecture, infrastructures, heterarchy, complexity, etc. enable the relocation of bodies and other objects both governmental and corporate on an unprecedented scale and extent.

The proposal here is a transversal political practice that is constantly evolving and accumulating new political concerns as new events unfold and that, through such accretion, builds a whole that is more than the sum of its parts but remains open. In that sense an architecture of *explicitation* involves more complex political directionalities as it transforms the space and the material organization of the built environment, even if those transformations cannot be inscribed in a holistic political program. For architecture to express the domestication of density and high-rise life through specific massing strategies in tall buildings is a legitimate political performance of an architecture of *explicitation*, as it is to convey that certain tendencies in the articulation of the building envelope capture new political *affects* and processes of diversification, to communicate that certain manipulations of the ground and the roof index the politicization of nature, or to explain that the breakdown of the correlation between interior and exterior and private and public signals more advanced social structures. And as such, this architecture does not need an overt alignment to a political program or ideology, nor to subscribe to a utopian formulation, to become politically directed. As an alternative to historical directionality, what we are proposing is a study of the political dimensionality of space. The dimensional analysis of building envelopes is an attempt to reground architecture's political performance in space and material organizations.

The particular interest in envelopes as political devices is that they constitute the element that confines a system and regulates the flow of energy and matter in and out of it. If traditional politics were based on equilibrium and closed systems, the contemporary mechanisms of social and economic integration suggest the need

explore a research methodology which emphasizes ongoing physical interaction with the environment as the primary source of constraint on the design of intelligent systems. We show how this methodology has recently had significant successes on a par with the most successful classical efforts. We outline plausible future work along these lines which can lead to vastly more ambitious systems'. Rodney Brooks, 'Elephants Don't Play Chess'. See also his 'Intelligence without Representation,' both in *Cambrian Intelligence: The Early History of the New AI* (Cambridge, MA: MIT Press, 1999). See also Brooks' 'The Relationship Between Matter and Life' *Nature* n. 409 (2001): 409-411.

- 55 For example, the interesting development of the Linux software as an assemblage of programmers in an evolving system where the different agents interact contingently, forming assemblages and alliances for a concrete purpose, rather like in a bazaar. See Eric Raymond, *The Cathedral and the Bazaar: Musings on Linux and Open Source by an Accidental Revolutionary* (Sebastopol, CA: O'Reilly and Associates, 1999).⁵⁶ The techno-underground is anti-corporate but not anti-market: it expresses the fight of micro-capitalist units (small labels and clubs) against the mainstream entertainment industry, following a model of viral production. It challenges individualism and subjectivity as the author tends to disappear into the technical milieu (sound ceases to be associated to physical gestures, music is made by machines, *Roland 808*, *Moog*, *Rhodes*...). Electronic music expands perception through an increase in complexity, through process rather than interpretation. It is not music as communication but as communion, *going with the flow*, connecting across cultures, and at the same time it is site-specific and has a deeply tribal context. It is addressed simultaneously to the mind and to the body as it is made for dancing. For a description of the politics of contemporary electronic music as an interesting model for a revision of politics in material practices see Simon Reynolds, *Generation Ecstasy: Into the World of Techno and Rave Culture* (New York: Routledge, 1999).

for open systems. As in thermodynamics, equilibrium is only valid for closed systems where the overall amounts of energy are always conserved. If one allows energy to flow in and out of a system, the number and type of possible historical outcomes greatly increases. Instead of a unique and simple equilibrium, we now have multiple ones of varying complexity.⁶⁰ By analyzing the building envelope, we have tried to identify some of the possible entrances into the political within architecture that may be able to re-empower the discipline as a truly transformative force.

57 For example the manipulation of the input and output mechanisms of production and prices, regularly practiced by global corporations, is a fundamentally anti-market technique aimed at controlling supply/demand dynamics. Likewise, anti-trust legislation is a product of bureaucracies aimed at preventing markets from evolving into monopolies. See Fernand Braudel, *A History of Civilizations* (New York: Penguin Books, 1993).

58 Ulrich Beck, *The Reinvention of Politics*.

59 “The Parliament is a place where very little happens. We could argue that it has become largely irrelevant. Not because the Great Politics has been sidestepped by economic forces, but because the techniques of representation of the official political arena have not evolved in the same speed as the multiplication of hybrid forums around ‘matters of concern’. This is what we tried to stage with the exhibition ‘Making Things Public’. The Parliament was there as a particular technique among the multitude of other hybrid, non-official, not necessarily legitimate forums which are very effective involving a variety of things: from the supermarket, and finance to law, technology, debates over nature, etc. Therefore there is a proliferation of ‘micropolitics’, to use Ulrich Beck’s term. In my opinion the dream of macro-politics, the sphere that could cover all these forums, has disappeared”. Bruno Latour in conversation with Konstantin Kastrissianakis for *Re-public*.

60 Ilya Prigogine revolutionized thermodynamics in the 1960’s by showing that the classical results were only valid for closed systems where the overall amounts of energy are always conserved. Thermodynamics of open systems do not operate within an overall equilibrium model, but present multiple states of equilibrium (static, periodic and chaotic attractors). Ilya Prigogine and Isabelle Stengers. *Order out of Chaos*. (New York: Bantam Books, 1984).