

GILLES DELALEX

GO

WITH

ARCHITECTURE, INFRASTRUCTURE AND
THE EVERYDAY EXPERIENCE OF MOBILITY

THE

FLOW

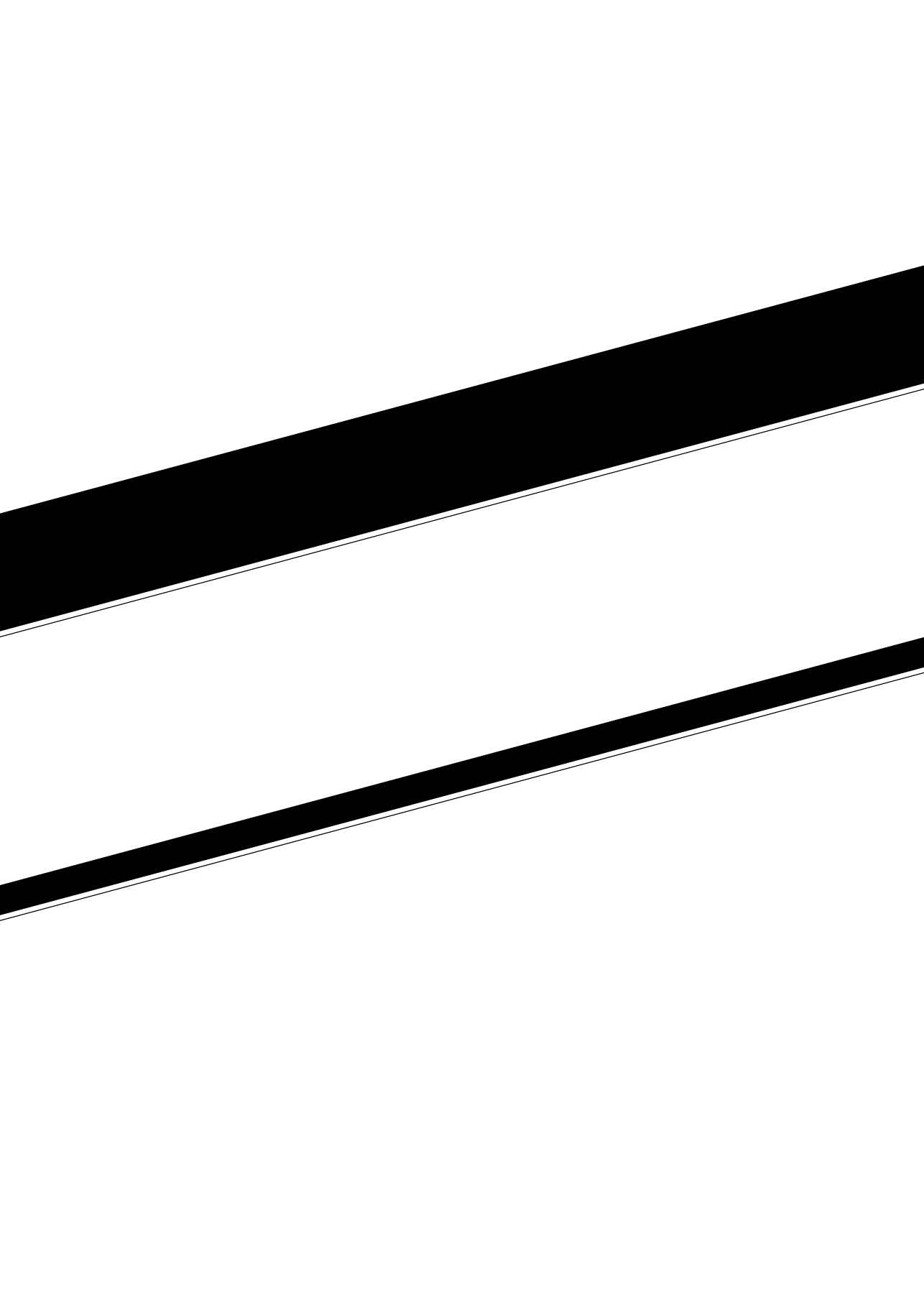




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In memoriam Jan Verwijnen, whose kind and methodological interest was the point of departure for this thesis.

INTRODUCTION

Can architecture continue to relate to the material space of buildings and cities, when this space itself is dissolving into a universal flow? In the mid 1990s, architecture shifts from semantics to economics. Architects no longer seek new styles and new languages, but data, diagrams and statistics. They design fluid and flexible buildings that work as the basic instruments of a world where everything is in state of flux and becomes more and more ephemeral. They redirect their imaginative and technical efforts towards infrastructures, and adopt new approaches derived from marketing and computer animation. The word “flow” becomes an almost tangible expression of this new attitude. “Go with the flow” – or be condemned to marginality! Hence, flows are no longer a link between A and B, a factor or a consequence of the wish to go somewhere. They no longer designate a state of movement, of coming or going. They become an end in themselves, a cultural condition for architecture and urban design. Drawing on Manuel Castells’ (1989) concept of the “Space of Flows”, this thesis queries the status of buildings and cities in a space increasingly shaped by flows. How do flows address architecture and urban design? How do they influence their forms, meanings, and processes? Can flows become an object of design?

The dependence of cities on flows is certainly not novel. Ever since Antonio Sant’Elia (1914) sang the praises of speed in his “Manifesto of Futurist Architecture” and started imagining buildings detached from the static media by which they had to be

designed, there has been an undeviating attitude in history toward the mobilisation of objects and images. What is new today is both the nature and the intensity of flows. In the last half of the century, flows have thus become increasingly cultural. They now consist of film, music and design. Meanwhile, buildings and public spaces become objects of exchange and partake in the fluid substance of flows. The increased intensity of global exchanges has also dramatically affected the shape and meaning of urban space. Professionals, academics and students around the world are increasingly aware that global flows have a determinant impact on urban space and that anything that happens in a local neighbourhood is likely to be influenced by global economic trends operating at an indefinite distance from that neighbourhood.

Today, cities thrive upon a diversified flow of tourists, capital and subsidies. In their continuous attempt to attract erratic flows of capital and investments, they tend to adapt their shape to the fluidity of capital. They grow into peripheries spreading across vast territories. This new condition might seem as a definitive and ineluctable “liquefaction” of urban space (Bauman 2000). But it can also be viewed as an active response to the dominant logic of flows. For, cities find in the loose and flexible organisation of their peripheries a means to adjust to the rapid and unpredictable trajectories of flows. Hence, they construct a new material condition that allows them to integrate the erratic character of flows, without losing their centrality. Aware of these structural transformations of urban space, and the necessity to articulate the abstract sphere of new global economies and the physical spaces we inhabit, architects and urban designers are now forced to redefine their own practices around new paradigms.

Central to this thesis is the argument that the space of flows provides a new paradigm for architecture and urban design. By introducing this concept, Castells (1989) attempts to explain the relationship between flows, architecture and urban spaces. He argues that society is increasingly organised around flows of people, money, images, signs, and technologies, together constituting a new spatial form that supersedes the traditional space of places (348). Places do not actually disappear, but their meaning is literally absorbed in global networks. Their position becomes entirely subject to their relation to other places and to their connection with the generic infrastructures that ensure their ever-wider sphere of involvement. Whereas the traditional space of places, the space historically rooted in our common and social experience of places, still rests on notions of proximity and physical contiguity, the space of flows lies on the simultaneity of events and interactions that take place over long distances. The space of flows appears then as the new spatial form of the “network society”, just as the city and region used to be the spatial forms of the industrial society.

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The notion of flows works in this thesis as a toolbox from which I pick quite freely questions that stigmatise the influence of global economies on cities and buildings: how do global flows solidify into urban topographies? How do they infiltrate our everyday experience of urban space? It also works as a point of departure for evolving a critical position in the field of architecture: what is the role of architecture in the space of flows? How should architects react to it? Should they accept it, or fight it? Can flows and buildings be conceived of as a mutual construction of each other? Although my aim is not to criticise Castells' concept, I develop a position that slightly contradicts his opposition between flows and places. The concept of the space of flows is thus constructed around a dialectic that opposes a global, dominant and abstract horizon of networks and an increasingly fragmented physical space. It entails an antagonistic relation between flows and places, which often finds its correlate in urban planning. Urban planners thus often consider that the relation between cities and infrastructures is necessarily conflicting, and that living and moving should constitute separated spheres of urban life, to be both spatially and functionally held apart. Now, if this dialectical opposition between flows and places, affecting both practice and theory, is taken as truth, the space of place and true experience preserving the possible construction of identity should inexorably shrink and dangerously dilute the space of our everyday lives.

By contrast, I argue for a position that takes into account the fact that we increasingly inhabit flows, and dwell in mobility. This position, which is both pragmatic, as it seeks to uncover the physical manifestation of flows, and optimistic, as it chooses to see the logic of flows as a new opportunity for cities and architecture, underlies the two main objectives of this thesis. The first objective is to investigate flows through their urban, physical and mundane manifestations. Although cities have always been the products of flows and traffics throughout history, the evidence shows that the actual intensification of global exchanges is concomitant with an unprecedented transformation of physical urban structures. Hence, urban and peri-urban spaces seem to be increasingly imbued with the fluid and dynamic qualities of flows. If there is sufficient evidence that the nature of flows is increasingly immaterial, and physical barriers tend to dissolve, it should therefore be taken into account that flows also need to hit the ground at some point. This is firstly because flows are not as free or deregulated as they seem. There are, for instance, multiple barriers to flow, such as matter, duration, physicality or local idiosyncrasies. The complex urban policies implemented by European countries also illustrate that a great deal of negotiation and regulation is required to allow the free flow of people and objects across borders. Secondly, flows are highly specific to times and places, which are them-

selves determined by very specific sets of objects, buildings, infrastructures, people and cultures. My argument, therefore, does not advocate once more the ideal vision of a perfectly smooth space of exchange and displacement, but raises the mundane and unperfected expressions of flows which are experienced in everyday life. It supports the idea of an “everyday experience of flows”, where ordinary movements, supposedly passive, become, as Michel De Certeau suggests in “*L’Invention du Quotidien*” (1990), creative acts and spaces.

My second objective, in contrast to Castells’ rather catastrophic scenario, is to propose an optimistic view in which flows and places become mutual components of each other. As we follow Castells, the dominant tendency goes toward an acultural and ahistorical space, aiming at imposing its global logic over scattered and segmented places, increasingly unrelated to each other, and less and less able to share cultural codes. We head toward a structural schizophrenia between flows and places, where a life unfolds in parallel universes whose times cannot meet because they are warped into contradictory dimensions of social space. Places vanish; they are rendered invisible by the overwhelming rush of capital, images, ideas and people. In contrast to this pessimistic vision, I argue that flows are not literally indiscriminating, and that they can convey unprecedented qualities for places. Cities and regions, for instance, acquire a new awareness concerning their capacity to attract cultural flows, and develop a sharper consciousness of their specificity. This new consciousness sometimes results in an artificial regionalisation, where the local flavour is exaggeratedly enhanced, and a form of xenophobia leading to the development of refugee policy devoid of compassion. The positive aspect of this remaking of places, however, is that cities and regions become more reflexive vis-à-vis their image and tend to enhance their own urban culture. I therefore suggest that the intensification of flows also opens a large scope of possibilities for regions or cities that wish to develop original projects and spaces aiming beyond the synthetic reproduction of local flavours. I propose to turn the dialectical opposition between flows and places into a question of balancing different degrees of connectedness within a spectrum. Places and cities construct themselves from the specific convergence of various networks and relations, respectively relating to different scales of involvement. As they are increasingly crossed by investment flows, cultural influences and satellite TV networks, they realign themselves in relation to the new global realities. From there, they can be imagined as particular moments in networks of social and economic relations, and specific experiences constructed on a far larger scale than before. Places and cities therefore are not necessarily conceived through a simple counterposition to their “outside”, to the growing influence of global flows, because it is precisely the relations to this “outside” which now define their shape and meaning. By elab-

orating on our common, but diverse experience of flows and generic spaces, I wish to raise a progressive view on architecture, infrastructures and urban space – a view which is commensurate with the conception of a global space of flows, within which we circulate more and more frequently and for longer distances.

This thesis is divided in five parts. The first part raises the implication of the space of flows for architecture and urban design with regard to the actual awareness of architects and planners of urban instabilities and global phenomena. Why are global flows an issue for architecture and urban design? Why does this issue fuel so many discourses? Firstly, the logic of flows defines a new context of interaction. Objects, cities and buildings become similar to nodes, interfacing and connecting different kinds of flows. They increasingly depend on their relations to others, on elements that are outside immediate control. As flows change their volume and direction, they also change their characteristics. Their function, value and meaning become relational and multiple, rather than absolute and individual. The question is no longer what objects and buildings are made out of, but what they interface with. Secondly, cities, buildings and objects become generic. Since the logic of flows involves a higher degree of instability and unpredictability, it forces us to accept a certain lack of control. This does not lessen the importance of design, but changes its objectives. Objects and buildings remain incomplete and interchangeable. Only when they are inserted in a specific environment do they take their full and definitive shape, if they ever take one. It is only under unpredictable conditions that they really become specific. Meaning moves from the object of design towards relationships created by flows. Accepting the generic character of buildings and objects, and their necessary incompleteness, becomes a new issue for architecture and urban design.

In the first section of this thesis, I also trace a short history of architecture in relation to flows. From the 1950s when the Metabolists adapted biomorphic structures to the design of buildings and cities to today's cyber-architectures, the continuous evolution of architecture has reflected the changing content of flows. The space of flows entails today a conception of space that marks a shift from the modern Cartesian space, where objects were geometrically organised on a neutral and horizontal background, to a more virtual space defined by intricate relations between cities, companies or individuals. It evokes a space which is no longer understood as a neutral ground (of representation or intervention), but as an active subject, agent or process. Not only does this transformation mark a significant evolution of the city's structure, it also entails a re-conceptualisation of architectural space. I illustrate this new comprehension of space through a series of contemporary projects which deliberately seek to incorporate flows of air, water or people, but also by immaterial flows of

electronics and information. By comparing the works of Greg Lynn, Stan Allen, Reiser and Umemoto, Foreign Office Architects, Rem Koolhaas and Toyo Ito, I present an overview of the tendency to conceive of cities as fluid and topographic spaces. This tendency shows that the issues of architecture and urban planning are now shifting from objects to flows. As Arjen Oosterman argues (2002) in one of his editorials for the magazine *Archis* today even flows have to be shaped and designed. The visual design of places and objects becomes less relevant than the movement that unfolds between them. In the fields of architecture and urban design, the issue is not therefore to design places or objects, but the flows that lead from one to another.

The second part focuses on the phenomenological aspect of global flows. How do we experience them? Does the logic of flows restrict itself to a business elite and the confidential networks of World Trade Centres and airport lounges, or does it also affect our banal experience of urban space? Has traditional space been annihilated and determined by the capsules of the car, the train and the plane? Has it been flattened and made legible like the sign-board of a motorway, or replaced by the virtual stage of the computer screen? In this section of the thesis, I propose to look specifically at the many petrol stations that punctuate the European network of motorways. These places, I argue, are some of the very physical expressions of the space of flows, and provide a transition between the abstract sphere of global flows and the physical spaces we come to experience in our increasingly nomadic lives. They make visible and explicit the solidification of global flows into built environments. Moreover, motorways like many other infrastructures, such as airports or metros, have induced parallel cities and new forms of urbanity. The motorway interchanges of Los Angeles, for instance, have become some of the most powerful architectures of the last century. Large urban complexes, such as La Défense in Paris, have fabricated huge physical knots of intermingling infrastructures. These extreme urban forms prove that the space of flows has taken a number of shapes, which have now become an intrinsic part of the environments we live in. One might argue that they represent the confirmation of the 1960s' utopias, that they are nothing but the actualisation of the different mega-structures imagined by architects such as Archizoom, Friedman, Kurokawa, Isosaki or Kitutabe, but without them. Yet, in the actual shape of transitory spaces, very little remains from the grand monumentality of their utopian predecessors. Their form is diffused and discrete. They include vast amounts micro-spaces such as stations, lounges, car parks, crowds and bus stops, which constitute an increasing part of our public places and confront us everyday to the increasingly influential logic of flows.

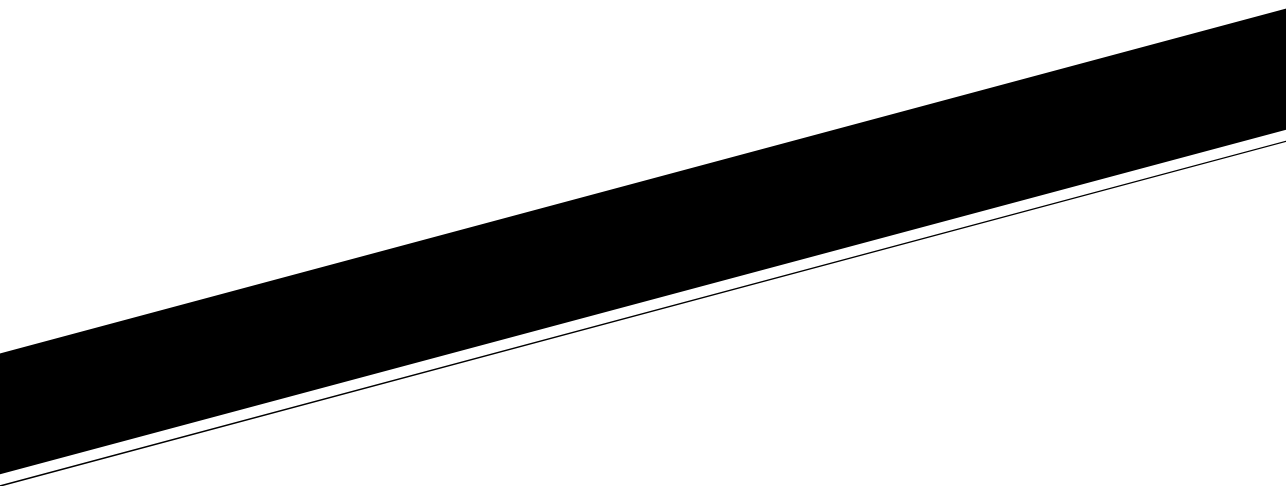
The third part of this thesis concentrates on the mechanism that draws the transition between the abstract sphere of global flows and the physical places that we in-

habit, namely the process of standardisation. Hence, the most significant feature of spaces of transit is certainly their extreme standardisation. Since the early implementation of industrial modes of production on 1950s American suburbs, the standardisation of urban space has gone beyond all predictions and forecasts. It has usually been associated with a negation of local cultures and a progressive uniformisation of space. Yet today, when we look at the peripheral condition of cities with their standardised networks of high-rise office buildings, communication thoroughfares, airports and shopping malls, what is striking is that standardisation seems to have created more than it has erased differences. Homogenisation and differentiation appear therefore as two determinant and antagonistic consequences of the logic of flows. I propose to interrogate this apparent contradiction by showing how they are in fact the two sides of the same coin and how they intersect each other. On one hand, the development of global networks entails the creation of standards that ensure compatibility of local infrastructures and cultures. It involves, therefore, a certain homogenisation of space. On the other hand, the multiplication of linkages among localities provokes a marginalisation of the places and populations that fail to enter global networks and remain as the fatal counterpart of the obligatory connection to generic infrastructures. Hence, we might think that more standardisation would produce more homogeneity and more sameness, but it is actually the opposite that happens. The process of standardisation is now embodied in such a multiplicity of rules and objects and entails such complex patterns that it acquires an increasingly ambiguous meaning. On the motorway, for instance, the self-similar repetition of signs and spaces seems to continually reassert the commercial monopoly of transnational corporations over public space and exert control over people. Yet, it also provides travellers with a sort of cognitive reassurance that allows them to feel at home whenever they travel far from home. Moreover, I argue that the process of standardisation bears a creative potential as it ensures the compatibility of local communication networks, cultures and languages. Rather than following usual alarmist discourses that criticise the increasing standardisation of urban landscapes, I emphasise the creative quality of standards and define them as potential subjects of design.

In the fourth part of this thesis, I propose to redefine the role of infrastructures in the context of the space of flows. Infrastructures, I suggest, act as urban mediators that allow flows and cities to mutually construct each other. They serve as a third entity that overcomes their dual opposition. Hence, the interrelation between flows and cities cannot be reduced to a merely causal or logical relation. Cities have always been places of transit. Today, with the intensification of global exchanges, they tend to accept an even stronger reliance on global flows. Their position is becoming increasingly dependent on their temporary alignment with global networks and the uncontrol-

lable variations of transnational exchanges – whether human, financial, economic, ideological or cultural. Flows and cities, I argue, are mutually defining entities, whose increasingly perilous, complex and intimate relationships are largely mediated by the infrastructure. I then investigate a series of mechanics of movement that construct together an intermediary landscape marked by a very technological character. This new artificial landscape involves a form of “organicity” and a multiplicity of phenomenological ramifications. Moreover, the content flowing through this diffused infrastructure is increasingly cultural and aesthetic. This gives rise to a both deep and superficial aestheticisation of urban space, where artificial local flavours cohabit with ostentatious flagship buildings. The infrastructure becomes, in this context, an aesthetic attribute of the urban, and quasi-graphical, identity of cities.

The last part of the thesis illustrates my theoretical argument through a series of architectural projects dealing with the motorway. Each project takes the motorway network as material expression of the logic of flows and a potential site of intervention. The motorway is not only apprehended as one of the very infrastructures that allows exchanges among cities, but also as a city in motion that cuts across borders and creates a new form of public space taking shape on a transnational scale. The different projects have been developed as an integral part of the reflection on the logic of flows. They should not be seen therefore as a basic application, or as a mere illustration of the concepts and issues raised in the previous sections. They should, on the contrary, be considered as a research through means that are intuitive, strategic, and aesthetic.





PART

ARCHITECTURE IN THE SPACE OF FLOWS

- 1.0 From biomorphic to virtual
architecture 23
- 1.1 New architectures of flows 33
- 1.2 Urban fields: the renewed interest of
architects in fluid urban conditions 47
- 1.3 The space of flows: a new paradigm
for architecture? 59

1.0 FROM BIO-MORPHIC TO VIRTUAL ARCHITECTURE

The fascination of architects for flows is nothing new. Architects have long tried to incorporate flows of goods, signs and people into the conception of their projects. Since the Japanese Metabolists of the 1950s, they have paid particularly close attention to circulation and movements in the development of buildings and cities. Today's architecture is distinctly marked by a culture of flows, assuming that not only objects and places, but also flows have to be shaped and designed. Thus, the actual design of places and buildings is often becoming less relevant than the movements that unfold between them.

It is within this context that I pose the question: what is new in architects' recent concern with flows? Is it just a piece of architectural history repeating itself? Or, are there new metaphors and new images reflecting this actual concern with flows? Has not the design of buildings, for instance, evolved along with the increasingly immaterial content of flows? I argue in this chapter that the relation between flows and architecture is not merely symbolic, but rather addresses modes of thinking that have long undermined the evolution of architectural practices and continues to influence them today. Increasing mobility and exchanges over long distances demonstrate how flows do not only involve the redefinition of architecture in terms of styles and aesthetics, but also in terms of programmes and processes of conception. My objective is to show that if the actual concerns with flows seem in many ways reminiscent of ar-

chitectural experiments of the 1950s and 1970s, it also addresses a new perspective, resulting notably from the changing nature of flows.

To this end, I retrace in this chapter the evolution of architecture in relation to the shifting substance of flows from the early 1950s until today. The first part begins with the transformation of 1950s organic structures imagined by the Japanese Metabolists, and the mid-1960s utopian projects of Archigram, Superstudio and Archizoom, which start elaborating on the virtuality of “informatic” networks. This transformation marks a shift away from biological models in favour of an information model that reflects the virtual nature of flows. The second part of this chapter evokes the linguistic turn that appeared in architecture during the 1980s. This shift in architectural practices reflects another change in the content of flows. Flows seem to acquire, during this period, a more cultural and aesthetic content and shift the attention of architects towards the semantic and stylistic issues of design. Postmodern and deconstructivist architecture represent two extreme positions of this movement. The third part of this chapter relates the most recent architectural practices to the increasingly fluctuating and uncontrollable nature of flows. The indeterminate nature of flows has thus become a crucial issue of architecture. Theories and practices have now shifted from semantics to models of non-linear, fluid and dynamic morphogenesis, involving forms and programmes rather than styles and aesthetics. The question of flows is no longer metaphorical, but pragmatic: can architects engender forms that follow the permanent fluctuations of flows? And if so, what shape should they give to these flows?

BEYOND THE BIOMORPHIC

Alain Guiheux (2000) explains in his article entitled “Collectionner l’Instant” that the influence of networks of communication on space has been a recurring question for the last forty years. Since the utopian projects of Hans Rucker, Archizoom, Yona Friedmann, Archigram and the Japanese metabolists, architects have been aware that cities are increasingly shaped by flows and infrastructures. In the late 1950s, Metabolists become very much concerned by the predominance of natural flows of air, water and people in cities. Like many architects of this period, they imagine biomorphic megastructures capturing and materialising urban flows. In 1961, Kenzo Tange’s studio proposes a plan for Tokyo Bay that clearly illustrates the principles of metabolism. The project comprises a spine, or trunk, and an array of branches and leaves that together form a clear tree-like structure. In the same year, Kurokawa produces a series of utopian projects inspired by biological forms and a process of growth representing that of living cells. He then imagines a city in which buildings grow like pro-

pellers, thus evoking the spatial structure of DNA. Roads follow an intricate system of loops and take the form of tubes developing like open organs. At the same period, Isosaki develops his project “City in the Air” as a system of urban intersections and interconnections in the air, providing a grand structure supported by infrastructural trunks, like a forest of trees. Each trunk affords commercial and residential plug-ins like those found in Peter Cook’s “Plug-in City”.

Metabolist architecture reveals a particular concern for the evolutive, yet irreversible, development of cities. Their projects endeavour to develop complex structures inspired by the natural movements of air, water, corporeal fluids and plants, but remain marked by a very formal and functional conception of urbanism. If their attention to matters of circulation reflects the realities of their new megalopolises, their biological structures often imply an undeniable control of movements. Hence, the problem with metabolist structures is that they remain constrained by a very hierarchical and ultimately simplistic organisation (Asada 1998, 67). The metabolist model is grounded in a linear conception of time and growth, and cities are still conceived of as mechanical organisations. Thus, Japanese architects, just like European architects, show a new and interesting inclination for issues of movement, diversity and complexity, but fail to escape from the modernist sensibility for natural flows and logical organisations.

In the mid-1960s, due primarily to the advent of information technology, the focus of architecture shifts from a conception of flows viewed in terms of a biological model to one that is informational. This shift is registered in the works of Archigram, Superstudio and Archizoom that propose an open and virtual architecture consistent with the conditions of informational networks and cybernetic environments. In 1969, Archigram conceives of the speculative project “Instant City”, which proposes a temporary and mobile event-space, emphasising temporality and mobility. Dennis Crompton’s “Computer City” evokes a complex overlapping of networks made of wires and tubes. A sensitised net provided with sensors detects the state, the needs and the changes of the city. On each intersection, a local computer analyses the collected data, while networks of larger sections allow the transit and return of this information. The city turns into an abstract network where soft information ultimately supersedes hard built masses. Likewise, Superstudio’s “Continuous Monument” offers a structure which is so large that the entire space becomes an endless interior. These practices begin the process of negotiating the physicality of megastructures with the virtuality of “informatic” networks. They shift their emphasis from physical movement to information flows. Detecting the increasingly informational content of flows, they move from the sphere of mobility to the sphere of virtuality and ubiquity.

THE SEMANTIC NIGHTMARE

In the 1980s, the increasingly cultural content of global exchanges heralds a further stage of evolution in the nature and architectures of flows. Social theories show that the substance of flows is not comprised purely of information, but of multiple forms of cultural exchanges. Flows not only contain data, statistics and digital money, but also aesthetic signs and materials such as music, fashion and design. This change means that cities and buildings are no longer the passive support of information flows, but the flows themselves. That is, they become part of the aesthetic and cultural material that runs along global circuits, not unlike trendy commodities involving cultural experiences within which signs, aesthetics and places are more and more rapidly reshaped. As the first accounts on the fluid condition of cities began to proliferate in the late 1980s and early 1990s, many contemporary architects turned to semiotics, referring to the structural linguistics of Ferdinand de Saussure and Roland Barthes, or the post-structural systems of Jacques Derrida. Deconstructivist architecture became crucially concerned with the development of an architectural vocabulary mimicking chaotic flows, while postmodern architecture attempted to control and tame the urban chaos by representing classical forms of order. Both movements were thus united in their will to develop a representational, communicational and semantic architecture. If these linguistic approaches succeeded to deal with the cultural content of flows and managed to raise the symbolic value of space and buildings, they also failed to give architecture the active role it deserves to play in a society largely determined by flows. They neglected the operative character of urban space and buildings; and their compulsion to represent and replicate, without significantly altering the flows within which they are immersed, ultimately deprived architecture of its ability to affirmatively create new urban forms and processes.

VIRTUAL ARCHITECTURE

Reacting to this “semantic nightmare”, as Rem Koolhaas (1992) once described it, many architects turn today towards more pragmatic methods and projects, stressing the necessity for buildings to remain adaptive to the erratic movement and ever-changing nature of flows. For Michael Speaks (1995), this new attitude affirms the active role architecture ought towards flows:

There is today a return to active, affirmative orderings [...] These new, post- or a-semiotic approaches to architecture and urbanism, of which Sanford Kwinter’s “Soft Urbanism”, Greg Lynn’s development of curvilinearity and pliant or fluid logics, and Jeffrey Kipnis’s concept of “Intensive Coherence”,

are examples, share an aggressive refusal of contradiction, collage, the representation of chaos, as well as the linear spatialities and temporalities of modernity and modernization. (56)

Speaks defines here a new attitude that consists in capturing a pre-existing complexity and inflecting chaotic flows, instead of either resisting or representing them. This attitude is not concerned by metaphorical interpretations anymore, but ways to direct or redirect flows in very material ways. Meanwhile, flows begin to lose their determinacy both in terms of their content and their trajectories, and their significance becomes that of an indeterminate and global urban condition. They gain in turn a new significance marked by randomness, multiplicity and self-evolution.

Simultaneous to this shift, architectural theory begins to consider models of non-linear, fluid and dynamic morphogenesis, particularly borrowed from the philosophy of Henri Bergson, Gilles Deleuze and Felix Guattari. This philosophy is essentially a philosophy of complexity which emphasises the oscillation between the actual and the virtual. Architecture finds in this philosophy a new active role that allows the co-existence and the random influx of various forces, and their possible evolution over time. The introduction of such dynamic and non-linear models raises new questions for architectural designs concerned with the notion of flow. Is it possible to engender forms that can be endlessly transformed so as to follow the permanent fluctuations of flows? Can architects provide flows with a shape while still retaining their virtual character? For if computer modelling such as those used by Greg Lynn can realise continually evolving forms, there is still a moment where architects are ultimately forced to freeze this form and turn it into a space, or a building. This, in a sense, becomes a critical moment in the conception of the project, and a dilemma that architects face in their everyday practices – i.e. when to stop incorporating the many evolving forces that influence the project. Is it possible to stop the image of the project, while preserving the possibility of its virtual transformation? Should architects imagine non-shapes, entirely disengaged from the uncontrollable movement of flows, or should they strive for an ideally designed shape allowing optimum trajectories?

A NEW MODERNITY

One remarkable thing in this short history of flows in architecture is the actual re-emergence of the virtual character of flows, already evoked in the 1960s and 1970s by Team X, Archigram and Superstudio. How can this return to the last modern and utopian projects be explained? Firstly, it should be noted that the virtuality of flows today is very different from what it was in the 1960s. When Dennis Crompton conceived his

“Computer City”, he reflected the virtual character of flows by taking computer networks as a metaphor. But since computers themselves have become the most banal tools of design, the notion of virtuality now refers to the possibility of designing and modelling cities or buildings through computers. We could view, for instance, Greg Lynn’s computer animations as an actualisation of the notion of virtuality; thus, what is virtual today is not the flow itself, but its simulation made possible by computer software.

It remains that, in recent architectural works, many other notions – flexibility, continuity, openness, growth and movement – seem reminiscent of the 1950s–1970s period. The reappearance of these notions in architecture reflects, I believe, a return to what used to be comprehended as the actual failure of modernism. It reveals a general reaction against postmodernism, paralleled by a positive reassessment of the latest modernist expressions. It therefore evokes a second stage of modernity that extends, and often reinforces, the first stage. In an interview, Rem Koolhaas (1992, 14) acknowledges his admiration for modern masters such as Kahn, Mies van der Rohe, and the Smithsons. He explains that some of his projects were one-sided dialogues with them. Rem Koolhaas’ projects also represent a further advancement of the thesis previously developed by these modern masters, principally on the question of order and indeterminacy. For, if he rehabilitates the importance of structures and (underlying) orders, he also includes in his projects a fair degree of randomness, popularity and hedonism. He thus proposes to recuperate modernism through its least perpetuated qualities – the qualities, I would argue, that have been shamelessly recuperated and appropriated by postmodern architecture. Moreover, the notions of order and disorder in modernism were never confronted to local specificity. They remained ideal notions. By asserting the fictional and narrative aspect of architecture as well as his own acceptance of chaotic and metropolitan contexts, Koolhaas brings modernism to a further stage of evolution. The renewed interest in the virtual character of flows reflects therefore the tendency to reappropriate and rehabilitate modern principles. This tendency, which is perceptible in the field of architecture, is actually distinctly developed in social sciences, notably in the works of sociologists such as Anthony Giddens, Bruno Latour, or Lash and Urry. It stems from an actualisation of modern utopias made possible by an unprecedented development of technologies and the correlated intensification of global exchanges.

THE SHAPE OF FLOWS

Questions around the shape of flows still dominate today’s architectural debates. For, if the notion of flows seems largely employed and exploited by contemporary architects, there is still little consensus on what form one should give to flows. Actual de-

bates in architecture reveal very diverse and opposite positions, ranging from the most literal and expressionist ones, such as those supported by Van Berkel or Zaha Hadid, to the most distant and perplex ones, such as those defended by Rem Koolhaas, Stan Allen or teams such as LabFac in France. Should architects attempt to give flows a specific form, or should they consider that the relation between flow and form is too arbitrary to even think of it?

A conversation between Rem Koolhaas and Ben Van Berkel, at the “Anyhow” conference held in Rotterdam, reflects quite specifically the terms of this debate (Koolhaas 1998, 96). Commenting on his Moebius House, Van Berkel claims that it is the role of architects to provide flows with a convenient form. Koolhaas replies that flows can take any form and assume any trajectory and that the desired relation between flow and function remains a hopeless nonsense. He offers the example of Heathrow airport where the daily changes effecting the trajectories of flows make any attempt to design spaces according to flows look very absurd. Describing these spaces, he says:

They are ugly spaces with no aesthetic except in terms of sheer complexity, in terms of times that you have to go up and down, the number of times that you have to turn corners, the number of times that you find astonishing obstacles, and your incredible ability to handle them without effort. (99)

He concludes his argument by reasserting the impossibility of shaping a single flow correctly. Thus, for Koolhaas, the relation of flow to form remains totally arbitrary, and it is hopeless to look for an architecture of flows, or an architecture shaped by flows. The material stability of architecture and the fluidity of flows seem therefore irreconcilable. Rem Koolhaas’ reaction at this point raises the contradictory aspect of his own practice. Didn’t he once explain that his Euralille project was an expression of the space of flows? Isn’t he also the architect who theorised the need to adapt architecture to the process of de-localisation and to the relevance of communication nodes in people’s experience? During the same debate, Alejandro Zaera-Polo, taking a more moderate position, replies to Rem Koolhaas that, although one cannot pretend to create an ideal configuration, it is still possible to produce a configuration that is more interesting than the ones that already exist. Saying that one cannot give a better form to flows, or a better organisation, would be, for him, to abdicate the place of the architect.

FLOWS AS PRIMARY MATERIAL OF DESIGN

The notion of flows has clearly been reflected in architectural discourses since the 1950s, endorsing various meanings along with the changing nature of urban movements

and global exchanges. Today, the notion of flows remains central to architectural discourses, but finds a correlation with a new series of practices. These practices, partially drawing on 1970s utopias, characterise themselves by relating flows not only to physical movements, but also to virtual transformations in time. The introduction of animation software, in particular, allows to incorporate fluctuating forces in the conception of buildings and simulate their progressive mutations. Although animation techniques remain largely experimental and marginal in their application, they reveal a new tendency, which can be understood as a new comprehension of architects towards the notion of flow. Aware of the increasingly chaotic nature and uncontrollable character of flows, architects thus shift their attention to the evolutionary nature of buildings and spaces, a form of becoming that propels projects into a sphere of flux and becoming.

This recent shift of attitude towards flows raises new questions and new ontological problems for architecture. Can architects both stress the importance of flows and the necessity to integrate them into architecture while also refusing to give them a form? How can they conciliate the material stability of architecture and the virtual fluidity of flows? Can they truly imagine forms that comply with the erratic and uncontrollable nature of flows? Can we even speak of an architecture of flows? These questions lie at the heart of contemporary architecture and give rise to very divergent positions. Some architects defend a very literal and demonstrative translation of flows into a fluid and curvilinear architectures. Some, on the contrary, consider the correlation between flows and buildings as nonsensical. Alain Guiheux, for instance, emits serious doubts about the actual attempts to grasp the fluid and virtual quality of flows. For him, today's architecture of flows has no form. It expresses itself in the infrastructural networks of the existing metropolis, in motorway networks, interchanges and bridges (2000, 12). For him, flows are hardly representable and they fail to engender a particular kind of architecture.

If we concede that the notion of flow has no more formal presence today than it has ever had through its cyclical appearances in the history of architecture, it is nonetheless necessary to acknowledge that flows stand at the centre of architectural debates and that they address an entire generation of architects marked by radical and often diverging positions. In a sketch published in the magazine *Any*, Lars Spuybroek (1999, 13) symbolises, for instance, the opposition between an American school primarily concerned by questions of forms, perception and experience, and a European school concentrating on the infrastructural and programmatic aspect of flows. The sketch shows two drawings separated by an axis, labelled "the cartesian split". On the right side, the American school is represented by a slightly hairy blob-like envelope filled with flat and regular ceilings; on the left side, the European school is sym-

bolised by a square box crossed by winding ramps leading from the ground floor up to the top. Two initials, RK and PE, situated on each side of the axis, possibly designate Rem Koolhaas and Peter Eisenman as the leaders of each movement. This diagram shows that, while the American school concentrates on the sculptural aspect of flows correlated with the introduction of new design tools allowing to conceive complex geometries, the European school prefers to manipulate interior spaces in relation to physical movements and programmes. The American school is certainly the most experimental and seductive, but the European school seems to relate more specifically to the societal impacts of flows. It yet remains more conventional in its means of conception and Cartesian in its expressions.

What characterises the debate on flows is that it questions the everyday practices of architecture. The recent intensification of global flows gives rise to unprecedented questions and methods that do not address a strict architectural avant-garde, as it used to in the previous decades, but a whole generation of architects. Following the leading work of Rem Koolhaas, this new generation of architects acknowledges that flows are no longer a means or a consequence of design, but a central issue. It stresses the necessity to recognise the absolute and unprejudiced fluidity of a new urban context where flows course through the capillaries of all built and living matter. The logic of flows has thus infiltrated every media, every object and every scale of our contemporary urban landscapes. Post-industrial cities deal with forces that take place on increasingly wider scales, and follow less and less predictable patterns. Urban spaces follows accelerating cycles of renewal, involving much deeper mutations than the surface aestheticisation suggested by so many authors of social theory (Harvey 1989, Robbins 1991, Castells 1996 and Welsh 1997). The logic of flows thus affects our comprehension of urban space in ways that neither postmodern, nor deconstructivist architectures have yet captured, becoming a strategic issue that exceeds both semantic and stylistic visions of architectural design. It forces architects to undertake an unprecedented redefinition of their practice, grasp the complex and material implication of flows on our environments and shift from the design of static built forms to that of dynamic forces. What surely characterises architects' renewed interest in flows is the belief that flows themselves constitute a primary material of design, just as do bricks, glass or concrete.

1.1 NEW ARCHITECTURES OF FLOWS

The previous chapter explored architects' growing acceptance of a new predominance of flows in urban settings. But if the many discourses on flows prove a new awareness concerning global developments, they also reveal a number of tensions and conflicts concerning the means and procedures through which flows should be understood and integrated into architecture. Since the mid-1990s, the notion of flows has become a major subject of debate, fuelling both architectural designs and theories, in magazines such as *Archis*, *Any*, *Quaderns* or *Architectural Design*, and conferences such as *Doors of Perception* held in Amsterdam in 2002. In this chapter, I examine the position of a series of prominent architects actively participating in this debate, with the aim of defining a spectrum of contemporary practices that provides a general overview of the different positions presently animating the question of flows in the field of architecture.

The debate often revolves around pragmatic concerns, primarily centred on the shape one should (or should not) give to flows. The question is basically: how should architects turn flows into design? This simple question involves a vast range of distinctive and sometimes contradictory answers. To comprehend the terms of the debate, I propose to investigate a series of works ranging from the most expressive to the most Cartesian and reluctant to physically replicate flows into built forms. I draw on the works of Greg Lynn, Foreign Office Architects, Stan Allen, OMA, Toyo Ito, and

Reiser & Umemoto, each developing a distinctive approach to flows. My first objective is to demonstrate that there are many ways to incorporate flows into design. There is, of course, the enthusiasm of young architects for soft topographies and curvilinear shapes. But these fashionable expressions do not suffice in explaining and understanding the deep-seated intrusion of flows into architecture which we are now witnessing. My second objective is to move beyond questions of forms and extend the debate to address the role that architecture ought to play in a society shaped by flows. For, the notion of flow as it is used and debated in architecture involves more than pure physical movement. It points to an actual condition of society that implies that flows have become a state of existence for most buildings and places today. It is interesting, in this respect, to note that the word “flow” in English coincides with two words in French: “*flot*” and “*flux*”. The French “*flux*” translates precisely into the English “flow”. The word *flot* (pronounced quite similarly to the word flow) carries a slightly different meaning, referring to a stream or a natural movement of matter, such as a watercourse. An ambiguity arises here from the fact that the words “flow”, “flux” and “flot” have an intimate, yet asymmetrical relation. Hence, a “flux” is not the same thing in French and in English. While it refers in French to a movement in space, it evokes in English a transformation in time. This encounter between French and English suggests, I believe, that the notion of flow, as used in architecture and social theory, refers to a global condition, implying not only the increased mobility of signs, goods and people, but also a deep and structural transformation of urban space, marked by a permanent state of mutation and chronic instability.

I begin my analysis with Greg Lynn whose work simulates natural flows of wind or people in order to induce the internal organisation of his buildings. Using the virtual space of animation software to incorporate these environmental forces into his projects, the three-dimensional and animated space of his models becomes a virtual space of flows itself. For Lynn, the question of integrating flows into architecture lies in the tools that architects utilise to create shapes. I also investigate Foreign Office’s project for the Yokohama Port Terminal. With its roof extending the public space of Yokohama and its fluid topography of bent surfaces, the Terminal seems to be a frozen form shaped by the convergence of local and global flows. With FOA, invisible flows seem to translate into a playful composition of intersecting surfaces. The third work that I draw on is that of Reiser and Umemoto, as they translate urban flows into complex structures permitting the evolution of their projects in time. The flows they incorporate vary according to the nature and scale of the site. Yet they always result in very expressive structures that evoke the self-transformation of the building. The fourth work I chose to investigate is Toyo Ito’s project for the mediatheque

of Sendai. If the cubic envelope of the building does not seem to particularly respond to the notion of flow, the structural arrangement of circulations is conceived so as to associate physical flows of people, air and water with immaterial flows of electronics. Ito's rhetoric translates into a subtle and enigmatic structure, similar to a bundle of cables and wires invading the building from the inside, and perverting its apparently modern and hermetic form. The fifth work I examine is that of Rem Koolhaas whose projects have long explored and played with the chaotic aspect of flows. Although his work is much too rich and too complex to be reduced to the sole questions of flows, we can detect a particular interest in architectural devices allowing the vertical circulation of people: ramps, escalators and elevators. Koolhaas thus often conceives of his buildings as large mechanisms of movement, where flows become themselves an integral part of the project's "behaviour". Finally I investigate the work of Stan Allen whose architectural approach draws largely on the distributive character of large-scale transport infrastructures, calling for a "logistic of context" aimed at facilitating exchanges.

In the last section of this chapter, I raise the common traits that relate these approaches, as well as the singularities that differentiate them from each other. Although some of them reflect a certain affinity for soft surfaces, the common feature of these approaches does not merely lie in the shape of the buildings. They are intimately related by a series of common traits: the integration of large-scale forces and the buildings' capacity to interact with these forces; the attempt to create new continuities between urban fragments and concomitant forms of flexibility; the interest in fields rather than objects, and, I would say, an implicit concern for notions of compatibility and cohesion. Therefore, far from reproducing the chaotic condition of cities, they adopt the fluid character of flows in order to create new continuities, among scales, speeds, spaces and programmes.

GREG LYNN: ANIMATED FORMS

In Greg Lynn's work, the notion of flows primarily relates to the techniques he uses in order to conceive of buildings and objects. The originality of his work lies on the use of animation software usually employed by industries working on animation and special effects that enable him to shape forms and volumes in a virtual space of moving forces. Thus, his architecture is very much about the simulation and manipulation of moving forces situated outside the project itself. These forces, which he calls "fields effects", are gradients of influence that simulate the external constraints of the project. They are abstract analogies representing the movement of the wind, the sun, or a car passing by. Departing from a virtual model created through animation

software, he produces a series numerically controlled models made of resin. Each of the models constitutes a prototype corresponding to a provisional stage of the project captured in its transformation over time. By acting through diverse variables, different solutions can then be envisaged simultaneously.

The techniques of conception Lynn uses in order to fabricate his resin models reflect a process of interaction between the internal organisation of the project and the external constraint he chooses to simulate. The result is a project that is shaped by a mosaic of invisible forces. These techniques seem particularly adequate to visualise flows, turbulence and movements. The virtual space they create is a very fluid and compliant space which can be described as “resultant”. Lynn explains that the movements he induces through animation software represent more than a traditional animation of static objects in space. The notion of flow in Lynn’s work involves great deal more than the blob-like shapes which he seems to cherish, and which many of his detractors consider as reminiscent of the 1970s; his work involves a real transformation of space. Lynn is not suggesting through his work that architecture should literally move, but that projects can now incorporate a wider range of external parameters and be conceived of in a way in which they emerge from a whole set of moving and overlapping flows. Regarding his prominent theoretical work as well as his experimental use of animation software, it can be argued that the notion of flow for Lynn is mostly a matter of tools and methods, affecting the overall conception of buildings and objects.

FOREIGN OFFICE ARCHITECTS: FLUID TOPOGRAPHIES

Although FOA do not use animation software, their project for the Port Terminal of Yokohama can be situated within the continuity of Lynn’s fluid and dynamic conception of space. The plan of the Terminal, with its swinging topography, looks like the sample of a meteorological map deformed by the flows that cross the site. It gives the illusion that the complex field of forces that Lynn simulates around his buildings was suddenly materialising, turning into the building itself. Thus, FOA’s building is similar to a monolith through which voids are sculpted from the inverted pattern of flows of air and people, like a riverbed is sculpted by a relentless flow of water.

By folding the ground surfaces like sheets of wet cardboard, FOA create a “geology of the hollow”, where the ground is no longer a series of flat planes put perpendicular to the forces of gravity. It becomes instead a folded structure that remains stable by virtue of a geometrical structure that moves stresses through surfaces. By manipulating the ground surfaces, they manage to construct a continuous field where the different spaces of the Terminal distinguish themselves by the ground’s subtle in-

flexions. For Alejandro Zaera-Polo, these manipulations of the ground are a response to the distortion of geographical, geological, cultural and economic grounds submitted to the influence of economic regimes of flexible accumulation. The issue for him was to make the artificial ground of the Terminal a material that could be manipulated, so as to respond and react actively to the repeated deformations of global geographies. The result is a complex artificial topography conceived of as a single and thick surface, including all the spaces and structural devices. Inside, the whole structure – the columns, the beams, the openings – are each absorbed in the folded surface. The sections of the project do not express a complex juxtaposition of objects, but a thick and composite surface.

In order to understand the role that FOA give to flows in the conception of the Yokohama Port Terminal, we need to return to Zaera-Polo's earlier writings. In his article entitled "Order Out of Chaos: The Material Organisation of Advanced Capitalism", he stresses the role of hybrid building in post-industrial geographies (1994, 25). He explains that hybrid buildings such as the corporate towers of Manhattan and the fashion buildings of Tokyo's city centre act as local devices allowing the temporary fixation of economic flows. They are local devices that permit their solidification in urban topographies. By combining in a very compressed space a variety of programmes, such as hotels, apartments, commercial activities, headquarters as well as public spaces, they play on effects of punctual concentrations. Their concentration then enables them to produce a field of influence all around them, to become more attractive, and capture erratic flows of capital and people.

When we now look at FOA's terminal, their use of flows becomes clearer. Just like the hybrids buildings of New York and Tokyo, the Terminal acts as a local device whose function is to turn flows of passengers into an urban topography. The term "topography" is taken here in a very literal sense. For, instead of creating a hard spot of vertical density surrounded by a loose field of influence, the Terminal unfolds as a thick and horizontal topography. It thus integrates the field of influence that hybrid building use to create around them, and becomes its own field of influence, thus reaching a further degree of hybridisation.

REISER AND UMEMOTO: WEAVING INFRASTRUCTURE

Reiser and Umemoto, like Greg Lynn and FOA, give flows a central position in the conception of their projects. But what is significant about their use of flows is the way they play on the deformation of existing typologies. Their work is more about flux than flows as such. They not only take flows as movement, but as a process of slow deformation of buildings in time. This emphasis on transformations in time relates

in many ways to the work of Lynn, but they translate this interest in much more physical, and sometimes quite ornamental structures, usually taking the infrastructural context of the city as a starting point. Reiser and Umemoto's concern in complex and self-evolving structures responds to the idea of making space capable of integrating the "unforeseeable". In their projects, space is either yet to be formed according to the given functions of the building, or formed as indeterminate. The possibilities stemming from the inscription of the building in a temporality of the incomplete assert a conception within which the "yet-to-be" becomes part of the economy of the project (Benjamin 1998).

Their concern with the incomplete therefore is not a mere pretext for inventing news forms, but an effect inscribed in the building's work and stemming from a very material source. In their submission for the Yokohama Port Terminal, for instance, it is the complex interrelation of temporal uses that governs the structure of the project: the use of the terminal as a port as well as the everyday use of the site occasioned by the presence of gardens and other urban activity. In this case, the incomplete governs the project in relation to the tradition of the shed building. Starting from the structure of the nineteenth-century shed, which produces a rather uniform and homogeneous space, they develop a structural model based on a three-hinged arch allowing the possibility of a differential growth. The roof structure is meant to integrate the two main elements of the building – the port and the community space – while simultaneously holding them apart.

In their project for the East River Corridor in Manhattan, Reiser and Umemoto propose to restructure the waterfront situated at the fringe of the FDR drive. They take the continuous frontage as a distinct entity, linked to various inland zones that it abuts and encompassing distinctly different systems of infrastructures: vehicular, pedestrian, commercial and cultural. Their proposal capitalises on this hybrid condition and reassesses the activity of the corridor. The FDR Drive serves as a scaffolding through which the project can grow. Taping into the existing roadway, they propose to occupy the zone of transition between the high speed of the FDR Drive and the low speed of the city grid. This zone takes the form of a single linear structure that incorporates a multitude of programmes, uses and places previously isolated. It reconnects them into a larger continuum through a flexible morphology that responds to local changes and continuously negotiates the rises and falls of the FDR Drive. Reiser and Umemoto describe their project as a programmatic sponge that absorbs the desires of the local communities. Flows, represented by both water-based and land-based public infrastructure become the dominant and most permanent condition of the project.

In these two projects, Reiser and Umemoto give flows a every structural form either by designing a structure that incorporates their fluid and dynamic qualities, or

by taking the existing infrastructure and the movement that it supports as a starting point of the project. In either case, the distinction between the object and its urban context is minimised, bringing about a relation of mutual dependence and absorption. Thus, in their work, the contrast between the static and the fixed, on one side, and process and becoming, on the other, disappears. Static and becoming, buildings and urban fields are not constructed in opposition to one another; rather, they mark out the presence of different ways of construing what is ostensibly the same object.

TOYO ITO: SOFTWARE ARCHITECTURE

Contrarily to the buildings we have examined so far, Toyo Ito's mediatheque for Sendai remains as basic in its form as a simple cube. Flows do not affect its primary shape, but they instil the whole conception of the structure as it becomes the very means of their distribution throughout interior spaces. Ito's mediatheque works on several scales of implication. It has four main functions, containing a library, a citizen's gallery, an information service for the visually and aurally handicapped and a visual media centre. Looking at the section, these programmes are distributed through a series of seven steel honeycomb structural plates filled with non-bearing partitions. In plan, the overall organisation seems to result from a cluster of columns distributed in a seemingly random arrangement.

To link the different plates, Ito imagines an enigmatic structure of twelve tubular steel hyper-shell tubes, inspired from the structures of the Russian architect Suckov. Each tube is made of a series of intertwined columns that penetrate all the plates. They look like complex bundles of wires and cables of such large dimensions that they come to support the building itself. The axonometric diagram shows that their diameter varies along their height, allowing them to encase deformations in case of an earthquake. However, the intertwined columns are more than a simple supporting structure. As the comparison with cables and wires suggests, they are also the communication infrastructure of the building made visible. They accommodate staircases, elevators and a whole series of technical apparatuses. Ito explains that one of their functions is to dissolve the self-containment of the plates and to encourage the activities situated on different plates to permeate each other.

The particularity of this structure is that it brings together material and immaterial flows. Thus, Ito's proposition for the mediatheque is to concentrate physical flows of air, water and people together with electronic flows. He stresses the possibility of integrating the primitive flows of air or water, which are traditionally linked to architecture, in a sort of biomorphic structure which would also support the flows of the electronic environment. Through the structure of interwoven columns, he says, it is

the huge scale of the digital network ocean that is fully entering the constitution of the architectural programme (Ito 1995). For Ito, the mediatheque is similar to a computer, an empty hardware providing the basis for potential systems and programming – the software. Unlike Lynn, FOA, and Reiser & Umemoto, Ito makes a clear distinction between what is solid and stable, and what is moving and fluid. His approach to flow is also much more metaphorical. In his project for the Jussieu Library in Paris, for instance, he designs a very horizontal building, containing two ovoid spaces meant to provoke a sort of swirl and an acceleration of exchanges around them. He there refers to a thermodynamic model, treating flows of people, like flows of air or water. As these metaphors find themselves softened by Ito's minimal design, they resist any literal translation into the shape of a building.

OMA: CHAOS AND INDETERMINACY

Rem Koolhaas, with his architectural office OMA, is probably the most influential and representative architects reflecting the new awareness towards flows in his work. More than any contemporary architects, he accepts and comprehends the implications of flows for architecture, and more specifically, the chaotic effects of flows on urban and peri-urban forms (Speaks 1995, 56). But instead of struggling with the complexity of representation as did its postmodern and deconstructivist predecessors, he attempts to use and reveal artificial logics which, although they appear constraining at first, offer limitless degrees of freedom when pushed to critical extremes. Koolhaas understands flows in their most indeterminate and uncontrollable nature. In his projects, he often favours intricate combinations of programmes and spaces. These combinations respond to the unstable nature of movements around which he conceives and constructs his buildings, giving rise to various and often unexpected architectural devices: the spiralling ramp of the Zeebrugge sea trade centre, the hollow topography of the Agadir convention centre, the intersecting ramps of the Rotterdam Kunsthal, the enigmatic voids carved out from the solid block of the French public library or the drive-thru road infrastructure that cuts through the Lille congress centre in the early stage of the project. These devices are similar to performative, or operative, structures. They perform a movement that engages the overall building into a form of action that often implies the mobility of cars, boats, activities or people. They take the shape of very determinate structures that allow multiple and indeterminate uses.

For Zaera-Polo (1992, 44), it is not accidental that OMA is located in the Netherlands, a country which is the supreme domain of flows, whether hydrodynamic or commercial. OMA's work, for him, interprets a reality that is made of flows and re-

mains in a perpetual state of change. It could be suggested that this is why OMA's buildings seem to be so permeable and compatible to flows. What characterises OMA's design, I believe, is that it proposes a pragmatic mechanism which, instead of tackling the semantic issues of chaos and movement, tries to combine the actual indeterminacy of flows with an architectural specificity.

STAN ALLEN: FIELD CONDITIONS

Stan Allen's engagement with flows takes the form of a design strategy, or perhaps, a particular way of organising and distributing projects through space, regardless of their scale and content. In his various works, flows do not correspond to any particular shape. His projects are acutely decomposed into very small fragments, which are then loosely distributed, in a seemingly random pattern. These flat and fluid organisations are comparable to a residue of sand, or dust after it has been spread by a breeze. Some parts are dense and compact, others thin and only vaguely discernible. The entire distribution is usually supported by a solid infrastructure that maintains the overall coherence of the project and defines its boundaries. According to R.E. Somol, Allen's projects express the "progressive slackening" of the periphery, most visible in the horizontal types of malls and airports. It mimics peripheral sprawl by reproducing the thick surface of urban peripheries and providing programmes with a consistency to float within (Somol 1999, 140). It therefore explores the possibilities offered by a continuous urban field where geographical boundaries are relaxed, and where homes, offices, factories and shopping malls are suspended in a continuous medium. Allen interprets the forces that animate urban fields as the massive and material networks of infrastructures that shape the actual metropolis. Field conditions, as he describes his architectural organisations, call for a "logistic of context" and a range of contextual tactics that would enable large-scale coherence to be constructed from existing micro-relations and irregularities (Allen 1999, 90).

Allen illustrates his approach by a broad range of examples: Barry Le Va's art installations, Iannis Xenakis' graphical transcriptions, diagrams of *moiré*, an aerial photography of a reindeer herd reacting to a helicopter overhead. He also evokes the self-expanding structure of Cordoba's mosque, explaining that the mosque has expanded through successive stages over a period of nearly eight centuries and has slowly evolved towards a sort of unity, although this unity had never been predefined: "Today, neither of its extensions is a fragment of the whole. If some would be added, and others subtracted, the building would keep its integrity" (93). Like the mosque of Cordoba, Allen's projects do not modify the context as much as they construct it. They prepare the ground for future buildings and events. They include important spaces

as well as residual ones and encourage improvisation. Like a network of infrastructures, they remain static, yet organise and manage various systems of flows, movements and exchange. They support supple forms of organisation, which he defines as “bottom-up”. They do not create or mimic flows, but rather encourage them. Therefore, we could say that Allen’s work operates by providing specific and open arrangements that facilitate physical exchanges between people or objects.

COMMON TRAITS

The architectural strategies utilised by Lynn, FOA, Reiser & Umemoto, OMA, Allen and Ito’s each demonstrate very different ways of dealing with flows. Lynn incorporates flows in his projects through computer simulations. He uses them as a design tool, or, put more crudely, as an excuse to create new shapes. We can therefore identify his approach to flows as the animation of forms. FOA similarly use the physical movements of people, cars and boats to shape the Yokohama Port Terminal. Their project appears as though it had been literally moulded around passengers’ trajectories. Yet the creation of new shapes is not the issue. For FOA, flows are rather seen as an initial condition, necessitating a flexible form achieved by a very fluid and continuous space carved out by the implementation of fluid topographies and manipulations of the ground. With Reiser and Umemoto, urban flows turn into complex and self-evolving structures that expand existing transportation systems. Their approach to flows is similar to that of FOA’s; however, the flexibility they seek is not spatial, but structural. Their concern with flows can be associated with the transformation of structures and infrastructures in time. Toyo Ito’s does not use flows in his architecture as explicitly as these previous architects, yet employs the notion of flows as a metaphor that allows him to imagine unexpected structures that disturb the apparently modern character of his buildings. His approach is definitely marked by the remaining influence of metabolist projects which used to adopt vegetal or biological structures in order to facilitate movements of air and people. Ito’s relation to flows can also be associated with the peculiar aesthetic of lightness, which he cultivates in each of his projects, and a taste for an ephemeral and nomadic form of architecture, smartly illustrated in his wind tower project. Koolhaas sees the logic of flows as an absolutely uncontrollable phenomenon, to which he categorically refuses to give a shape. Yet he acknowledges their indeterminate character and often imagines architectural devices that encase their chaotic fluctuations. His relation to flows can therefore be associated with a “programmatic plasticity” through which he achieves specific forms of urban complexity (Attali 1996). Allen, for his part, proposes to treat architecture as a network of infrastructures that support and facilitate exchanges between urban

fragments, favouring a loose and horizontal distribution as opposed to hierarchical compositions. His response to the logic of flows relates to a particular form of organisation, which he labels the “field condition”.

Although these offices seem to adopt very distinct strategies, I argue that they are linked by a common attitude towards flows, which can be summarised by a series of common features. The first common feature arises from their will to incorporate large-scale forces into their projects. Architecture in its everyday practice obviously links numerous scales, from the design of furniture and technical details to the strategic planning of cities. Buildings, cities and regions can all be considered as a fragment of a larger surrounding area. What is specific about the approaches examined thus far is that they each insist on creating exogenous and inclusive forms that disrupt the traditional hierarchy of scales. These forms are informed by various systems: the fine-grain fabric of buildings, networks of freeways and interchanges, the gridded pattern of the streets, the movements of boats and passengers and so on. It is not accidental therefore that these architects seem particularly interested in the conception of large-scale infrastructures, such as ports or airports, which naturally relate to large scales and global flows.

Zaera-Polo explains, for instance, that the reason why FOA’s port terminal could identify so consistently with the idea of using the ground as an enveloping surface was partly due to the fact that the programme, a transportation facility, was suited to the exploration of a shifting, unstable construction of the ground (Zaera-Polo 1998, 127). It is not yet the actual size of FOA’s terminal, nor that of Ito’s mediatheque, that gives them such an infrastructural character. Their infrastructural character arises from a strategic design that situates them at the intersection of numerous flows, whether electronic, environmental, or cultural. The context here is not a neutral base upon which buildings and flows are superimposed, but the very source of the many flows and large-scale forces that influence and shape the project itself. The second common feature lies in the fact that all the approaches that we have investigated consider flows as a vector of continuity with the potential to create new continuities between urban fragments. Just as the fragmentation of the former post-modern city reveals its incapacity to accommodate the inherent instability of global flows, all the projects seem to call for a more continuous conception of urban space. Lynn, FOA and Ito do not define their projects as physical additions to the existing city, but as subtle inflexions of the forces already shaping its urban fabric. They reassert a fast-changing urban condition, within which projects introduce peaks of intensity encouraging the smooth manipulation of external forces. The transformation of the urban fabric caused by the addition of a new project appears then as a discrete schematic deforming the urban continuum. A project, in this perspective, is not a just

new piece in the puzzle; it acts as a discrete point of inflexion that makes the tangency between the disparate flows and forces shaping the context, and assures their physical and programmatic continuity.

The third feature shared by these projects is a form of interaction between buildings and their immediate context. Thus, most of the projects here cultivate a “resultant” character. They do not exist outside the relations that they create, or maintain, with their surroundings. None of them justifies itself by its inner programme. They all seem to find the reasons of the existence in large conditions, which they tend to emphasise and comply with. This resultant character is not yet a form of weakness, or submission to flows, but rather a deliberate attempt to absorb the forces that penetrate them from the outside, and to remain in phase with a context of accelerated change.

The fourth common feature shared by these architects is that, in order to incorporate large-scale forces, they intend to provide space with a new form of plasticity. This plasticity is the actual equivalent of the modern notion of flexibility. It does not yet refer to an absolute neutrality of space, the kind of flexibility symbolised by the typical modern plan, with its regular grid of columns and its non-bearing walls. It refers instead to a programmatic flexibility that allows a building to integrate different uses through its life, and to the capacity of architectural spaces to be endlessly remodelled and reprogrammed. Infrastructural projects are particularly concerned with this notion of plasticity since they specifically derive their programme from fast-changing movements of passengers and customers. This plasticity is now becoming an intrinsic and recurrent quality of contemporary projects, regardless of their scale, programme and situation.

The last common feature I identify is a recurrent interest in fields, rather than objects, reflecting architects’ actual fascination for numbers, economies, quantities, size, large scales and other multiplicities. If Allen is the only one here to express this particular appetite for the multiple, we will see in the following chapter that he actually institutionalises the work of a generation of architects who have been highly inspired by the loose and expansive condition of urban peripheries.

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Contemporary architects, we see, translate their interest in flows through various strategies usually meant to achieve the greatest fluidity. Their interest in fluid spaces often includes reflexive tactics that establish dynamic transitions between scales, speeds, and spaces, and raise the necessity (and the difficulty) for buildings and cities to keep up with the perpetual restructuring of urban economies. Integrating flows into architecture cannot be reduced therefore to a mere matter of style. If the actual multiplication of fluid and curvilinear shapes in contemporary architecture is

no doubt an expression of this renewed interest in flows, it is also important to acknowledge that, in this series of works, flows appear as a fundamental condition of architecture and urban design, which does not necessarily translate into literal architectural forms. Hence, the actual conceptualisation of buildings as discrete intervals evolving within vast and fluctuating fields of forces marks a shift away from the postmodern metaphors of collage and fragmentation, which characterised Postmodernist and Deconstructivist movements until the mid-1990s. Jeffrey Kipnis, in particular, highlights the distinction between collage – which he defines as “discontinuous heterogeneity” – and more recent practices of “continuous heterogeneity”. The dismissal of collage strategies, he argues, is the hinge on which contemporary architects turn from postmodern practices (including Deconstructivism) to more cohesive practices (Kipnis 1993, 40–49). Thus, what may be the ultimate feature of these works, and surely the least declared, is the search for a new form of compatibility between the numerous networks and objects that compose contemporary urban landscapes. This search for compatibility expresses itself in an architecture of the “loose fit”, which challenges an unprecedented degree of indeterminacy. As it searches to reduce the risks inherent to the growing unpredictability of urban developments, it loses its radicality, but gains in turn a form of cohesion. This results in very compliant designs, which we should not understand as a form of weakness, but as an active and reflexive acceptance of the context.

1.2 URBAN FIELDS: THE RENEWED INTEREST OF ARCHITECTS IN FLUID URBAN CONDITIONS

From the window of his apartment on the 28th storey of a high-rise building, Lars Lerup sees Houston as a great milky way where all is labile and transient. He describes it as “an abstract field of moving particles and forces, interacting on a fluid plane in perpetual motion” (Lerup 2000, 48). Lerup’s view of Houston is representative of the interest that architects have recently showed in fluid urban conditions. With the rise of new global economies, it seems that cities are adapting their form to a growing mobility of resources and capital, finding in their increasingly flexible organisation a means to absorb the ever-changing trajectories of flows. The efforts of cities to keep up with the erratic movements of flows result in a “liquefaction” of their rigid structures. They expand into endless peripheries and develop through large urban regions with multiple sub-centres. The former historical city is replaced by a loose and sprawling urban field. How do architects integrate this new urban condition in their discourses? Can we relate it to their actual enthusiasm for flows, fluid spaces, and infrastructural design?

In the following chapter, I argue that architects’ interest in flows is largely driven by the belief that global flows relate to the social and physical realities of today’s metropolises. Therefore, flows do not only involve invisible exchanges of money and signs, but also shape the very physical urban structure within which they insert their buildings. I draw primarily on the notion of field, a buzzword which has haunted archi-

ture for a number of years now, in publications such as the Berlage Institute's year-book 1995–1996. Field conditions, as Stan Allen calls them, have no particular scale. They are fluid and distressed organisations that can evoke the flat surface of urban peripheries, as much as global geographical map. Drawing on the notion of field, my first objective in this chapter is to demonstrate that cities respond to the fluidity of new economies, by reproducing the flexible geometry of global flows, at the urban scale. Architectural research has long been fed by empirical studies of cities, thus conceding most of its purpose to urban research. It is therefore not surprising that urban fields convey many implications for architecture today. My second objective is to show how architects integrate the notion of field in their discourses and use it to redefine the urban contexts in which they intervene. I contend that the recurring use of field-like images and metaphors in their discourses reflects a conception of the city that shifts from the chaotic and fragmented image of the postmodern city to that of a loose and continuous field of interactive forces.

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In the first part of this chapter, I underline the opposition between fields and objects in the works of Greg Lynn and Stan Allen, as they both show an increasing interest in the study of fields, as opposed to the production of objects. In the second part, I explore how Deleuze and Guattari's concept of the Body without Organ (BWO) represents the destratified and field-like body of large metropolises which seems to indifferently absorb buildings and infrastructures. The third part of this chapter raises the economic aspect of urban fields. Alejandro Zaera-Polo compares the multiplication of sub-centres in cities to the multiplication of niche markets in the new economy, arguing that the fluid organisation of cities reflects, at the urban scale, the shift from an economy of scale to an economy of scope. In the fourth part of this chapter, I draw on Rem Koolhaas' analysis of the Pearl River Delta in order to show that the apparent dissolution of urban structures does not actually erase differences, but intensifies tensions and exchanges. I then raise the peculiar visual perception that results from urban fields. Lars Lerup's account on Houston's suburban condition draws attention to our actual incapacity to grasp the city's entirety. For Lerup, Houston's visibility lies in the emergence of unexpected megashapes, such as the cluster of downtown skyscrapers and the large canopy of trees covering the city. These large fragments, apprehensible at vastly different scales of motion, do not imply the idea of completion, but that of a partial and provisional perception. Finally, I suggest that architects' interest in urban fields results in an architecture that attempts to replicate the flat and distressed condition of the periphery. This architecture redirects its practice toward the field of infrastructure, understanding buildings not as autonomous and symbolic objects, but as strategic, physical and urban matter shaped by flows.

FIELDS VS. OBJECTS

Both Allen and Lynn explicitly base their practice on a shift from objects to fields. In Lynn's work, fields take a rather abstract form, consisting of virtual simulations of the vicissitudes of the context made possible by animation software (such as Soft-Image, Alias, Wavefront...). They imply compliant design tactics turning the invisible constraint of a site into positive and visible forces. These compliant tactics do not seek an absolute cohesion of the overall form, but intensive and local connections between free existing elements. For Allen, the notion of field refers to a more urban and physical condition, emerging from the presence of large networks of infrastructures. Field conditions, he says, are material conditions that unfold like fluid aggregations of fragments loosely distributed in space. They are "spatial matrices that integrate a multitude of disparate elements into a single form, while respecting the identity of each of these elements" (1999, 92). Field conditions unfold in space indifferently to any predetermined structure or hierarchy. Their shape does not result from a large and global structure, but from the micro-relations linking the different aggregates to each other. Meteorological maps and *moirés* (differential patterns resulting from the superimposition of regular patterns) are examples of field conditions. They distinguish themselves from more conventional forms of compositions by their loose distribution and their intense movements.

For both Lynn and Allen, the notion of field represents an attempt to give an active role to urban matter, rather than existing as architectural objects. Their work reflects an attempt to engage projects with the continuous horizontality of urban peripheries, with a thick urban surface that fluctuates like a plenum of matter animated by cultural, economic and political forces. The emergence of field-related practices in architecture and urbanism corresponds more generally to a new conception of urban contexts. It forces architects to view cities, not through their constitutive organs such as buildings and districts, but through the myriad of micro-relations they establish among each other. Field-related practices indicate a shift from a modernist model, focused on well-defined objects, to a new model that embraces the complexity of urban contexts, designating a shift from the unique to the multiple and from the individual to the collective. The notion of field therefore relates to a new set of architectural approaches that engender urban projects from their potential connections to the outside rather than in terms of their self-containment.

This perspective opposes urban contexts to single and autonomous buildings. For Lynn, in particular, the opposition between fields and objects reflects the opposition between urbanism and architecture. When architecture finds an implication in relatively stable forms, urbanism takes into account a diffused and transitory terri-

tory, characterised by overlappings of movements, flows, and densities. When the qualities of architecture belong to the domain of forms and objects, the qualities of urban contexts relate to the domain of fields, of gradients and intensities.

URBANISM WITHOUT ARCHITECTURE

Should we yet consider that the notion of field imply the progressive disappearance of architecture in cities? In the context of today's architectural scene, it seems to correspond to a weaker presence and significance of architectural objects. It is not that they simply vanish, but that their emergence is reduced to the occasional convergence of large networks of infrastructures. In this respect, R.E. Somol (1999) proposes to understand the field condition of cities as an "Urbanism without Architecture" (UWA), a term that corresponds to an urban condition devoid of significant objects and architectures. Through this expression, he refers to Deleuze and Guattari's concept of the "Body without Organ" (BWO) which describes a body in which organs are nothing more than flows and intensities, a body which is similar to a surface of speeds and intensities before it is stratified, unified, organised, and hierarchised. The BWO is a body before the coalescence of its parts, before they sediment into meaningful, organised totalities. It is animated by provisional linkages of elements, fragments, and flows of disparate substance. All its parts have the same ontological status. The BWO therefore invokes an assemblage which all dimensions have been flattened in a single plane – a plane upon which reciprocal relations between flows and intensities play themselves out (Grosz 1997).

There is an obvious analogy between the urban body of large metropolises and the Body without Organ. The form of the urban body of metropolises is contingent upon provisional and temporary micro-groupings. It is neither space nor is it in space. It is urban matter that occupies space to a degree corresponding to the intensities, the traffic and the flows it causes to pass and to circulate. It is less interested in the identity of its urban fragments than in their organisation upon its flattened surface and the types of relations it induces. Once the urban body is deprived (or freed) from buildings and objects, once it has flattened them all on a single plane, it becomes similar to a Body without Organs – an urban field defined, not by its form, but what it actually performs, the linkages it establishes, the transformations it undergoes, the ways it expands and proliferates its fluid qualities to other urban fields. Far from echoing chaotic visions of the city, the notion of field reflects here the distressed condition of the contemporary city – its thick and heterogeneous surface and its lack of clear boundaries. It shifts our comprehension of cities from the postmodern image of urban collage towards images of landscapes and

topographies, accentuating the fluid, seamless and continuous condition of large metropolises.

FLEXIBLE ACCUMULATION

For Zaera-Polo, the notion of field relates to the economic aspect of urban space. The shape of our metropolises is undeniably influenced by economic exchanges. David Harvey identifies the material influence of economies on cities in terms of accumulation (see Zaera-Polo 1994, 25). Central to his argument is the idea that urbanisation is the process through which flows of capital solidify into built topographies. For him, urbanisation has historically developed as a process of accumulation and location of surpluses. Today, since capital is increasingly mobile, the shape of cities is more and more determined by their capacity to incorporate the circulation of surpluses. Harvey names “flexible accumulation” the form of economic integration where over-accumulation problems are not resolved through increased urban density, but through mechanisms of spatial and temporal displacement. This new regime of flexible accumulation implies that cities adapt their form to an increasing mobility of resources and capital. Hence, cities are increasingly required to maintain a flexible organisation so as to absorb a continuous spatial reformulation, without yet losing their specificity and their centrality. Urbanisation is therefore transformed into a process of flexible accumulation, facilitated by the progressive liquefaction of rigid of urban structures.

For Zaera-Polo, this phenomenon is now visible in the polycentric development of large urban agglomerations such as the Dutch Randstad, or the German Ruhrgebiet (1994, 26). The characteristic of these urban regions, he explains, is to develop as vast aggregates of cities. Their many sub-centres act like local attractors, catching and consolidating flows of money and people. The relations that tie them together are not governed by matters of size, or distance anymore, but relations of density and concentration. The importance of each centre lies therefore in its power of attraction. Zaera-Polo uses the vertical density of Manhattan towers and Tokyo's fashion buildings as an example of cities' adaptation to regimes of flexible accumulation. Their punctual density and the large amount of activities they host allow them to constitute particularly attractive locations within the urban matrix. They allow the buildings to develop as a loose field of local attractors, reproducing at the urban scale the polycentric structure of large urban agglomerations as well as the decentralised geography of global economies. Manhattan towers and Tokyo's fashion buildings therefore reflect a shift from a logic of scale, based on size and quantity, to a logic of scope, based on the multiplicity of niches and locations. Like the polycentric organisa-

tion of large urban regions, they permit the flexible geography of capital to overcome the rigidities of the old hierarchies of traditional city centres.

EXACERBATED DIFFERENCES

Theoretical perspectives responding to the actual dissolution of urban environments often raise the flat and distressed artificial landscape of the metropolis. Behind this landscape metaphor lies an invisible continuity, taking place among the fragments of the postmodern city. By treating the periphery as a condition of its own, and not only as a centripetal expansion of the centre, architects seem to detect in the periphery a new coherence that contrasts with the collage-like images the city has been associated with thus far. Random and disorganised patchworks, archipelagos of functional and autonomous enclaves – each of these images reflect the fragmentation of the periphery and the abrupt contiguity of functional zones that often have no relation to each other. Yet they no longer succeed to express the vast urban continuum that is now replacing the former postmodern city for, more important than the fragments themselves, is the intense interaction that ties the fragments to each other.

The constant readjustment between urban fragments is an important aspect of Koolhaas' account (1998) on Pearl River Delta in which he highlights the field condition that is now emerging in the new Chinese megalopolis. But rather than emphasising the issue of its fluidity, he stresses the tensions that occur between the different cities comprising the actual megalopolis. In his description, Koolhaas explains that each of the parts of the megalopolis is simultaneously in competition and in close relation to the others (182). Hong Kong, Dongguan, Shenzhen, Guangzhou, Zhuhai, and Macao, the cities that comprise the Pearl River Delta are connected to each other by a complex web of infrastructures. But instead of creating a network, or a new urban body, this web of infrastructure maintains a deeply asymmetrical and differentiated urban condition: "Each part is both competitive with and has a relationship to other parts. Now these parts are being stitched together by infrastructures, so that every part is connected" (188). Pearl River Delta does not yet have a stable and definitive configuration. The slightest modification of one of its points implies the entire readjustment of the whole, ensuring the equilibrium between its complementary extremes. Koolhaas considers this urban model "the city of exacerbated difference (COED): a city that does not imply the stability of a definitive configuration because each part is unfixed, unstable, and in a state of perpetual, mutual adjustment, defining themselves in relation to all other parts" (188). Fragmentation, continuity and difference are not therefore antithetical, but rather complementary

attributes of urban fields. They proceed from the same process of sprawl, the same driving energy that stretches cities along vast lines of infrastructures, cuts across the loose and amorphous carpet of malls and factories and transforms the city into a malleable urban field.

MEGASHAPES

The city's new field condition is undeniable, but it involves a new kind of perception. In his depiction of Houston, Lerup attempts to associate the immense scale of the metropolis, marked by endless series of cars, buildings and people, with the closed and intimate perception of trees with the effect of combining a far and distant with a sharp and focused vision of the city. The increasing number of signs, objects and buildings composing the urban field, he explains, makes it harder to perceive the city as a whole. Once inside, one can only perceive fragments, and it becomes impossible to grasp the entirety of the urban structure and conceive of the city's completeness. For Lerup, there are two ways to look at the new metropolis: from the top, or from the bottom. From the top, from the high level of a skyscraper, or from an aeroplane, one can perceive "megashapes", such as the green canopy of trees covering the city, or the skyline of the downtown centre. These two megashapes have very different forms. The canopy demands a special kind of attentiveness, since it operates on the periphery of everyday vision. The downtown centre, on the contrary, imposes itself as a complete and well-defined form. But if one observes them from the bottom, it becomes clear that the green canopy and the tight assembly of skyscrapers both rely on the repetition of small elements – that is, a "mental map of diverse subjectivities" (Lerup 49). From bird-eye, the canopy of trees looks like an endless carpet covering the city; from inside, it is understood from the counting of trees. These two perceptions are radically different. One is close and intimate, the other cool and distant. The field condition of cities therefore raise a double reading of the city, one from inside leading to an appreciation of the algorithm of the shape, and one from outside leading to an understanding of the whole, the result of the algorithm, once solved.

BUILDINGS AS INFRASTRUCTURES

As fluid urban conditions redirect architects' attention towards the links that establish themselves between objects and buildings, they naturally enforce their interest for infrastructures. We have seen in the previous chapter that urban projects often carried an infrastructural meaning, not only because of their size, but also because of the large-scale forces they attempted to integrate. This suggests that architecture is

currently shifting toward the field of infrastructure. As Stan Allen remarks: “they [architects] can begin to redirect their own imaginative and technical efforts toward the questions of infrastructure. A toolbox of new and existing procedures can be expanded by reference to architecture’s traditional alliance with territorial organisation and functionality” (52). Since architecture attempts to incorporate territorial scales, it shifts towards a more material form of practice, which Allen labels as “infrastructural urbanism”. Infrastructural urbanism understands buildings as infrastructures. It favours instrumental approaches and realistic strategies that do not devote themselves to the production of autonomous objects, but the production of diffused material conditions, similar to peripheral districts. This is not yet a return to master planning, for it also integrates a certain complexity of the real. It means that architects redirect their interests toward questions of scale, use, movement, flow and exchange, thus moving toward infrastructural design.

Land surveying, territorial organization, local ecologies, road construction, shipbuilding, hydraulics, fortification, bridge building, war machines, and networks of communication and transportation were all part of the traditional competence of the architect before the rise of disciplinary specialization. Territory, communication, and speed are properly infrastructural problems, and architecture as a discipline has developed specific technical means to deal effectively with these variables. Mapping, projection, calculation, notation, and visualization are among architecture’s traditional tools for operating at the very large scale. (52)

According to Allen, architects are now reclaiming the traditional tools that once related architecture to large-scale projects and infrastructures. In doing so, they relate architecture to material practices, such as ecology or engineering, that are concerned with the conception and the transformation of large scale assemblages over time. Regarding the notion of flow, these more material forms of practice concentrate on the physical support of flows and all the procedures that allow to channel, distribute, orientate, or diffuse flows.

It is clear from the work of Lynn, Allen, Zaera-Polo and Lerup that the notion of field has infiltrated many architectural discourses. The term “field” refers to a new form of urbanisation concomitant with the intensification of global exchanges. It points to an urban condition where global flows turn the traditional city into a thick and complex topography, a vast plenum of matter predominantly constituted by motion and temporalities. Because of their dependence upon economic flows, cities are develop-

ing a more flexible structure. In order to fix flows of people and capital, and transform them into urban matter, they adopt a loose and fluid organisation that allows their urban fabric to adapt to the fluctuations of the market. They expand horizontally giving rise to flat and amorphous peripheries, absorbing indifferently suburbs, zones of commercial activities and infrastructures.

Elaborating on Houston's field condition, Lerup explains that this new urban condition tends to disembody all possibilities of separation. It becomes the fabric that connects everything into a whole (48). It is also apparent that the peripheries of cities, by the fact that they are linked by open-ended networks, tend to form large clusters of interrelated and co-dependent centres, developing through vast urban regions. The notion of field implies therefore that the same organisation of space replicates itself from scale to scale. The similar conceptualisation of cities and global geographies reflects the belief among architects that flows participate of a scalar dynamic that disrupts the old hierarchy of scales. The logic of flows implies a restructuring of space that leads to an end of the strict self-containment of scales (whether interior, architectural, urban, regional, national or international) in favour of a more lateral traverse across scales. When drawing a parallel between the polycentric organisation of urban regions and the influence of Tokyo fashion buildings or Manhattan towers on city centres, Zaera-Polo demonstrates that fields are self-similar conditions, reproducing themselves on many scales, from the increasing inter-urban competition, through to the polycentric structure of urban regions, up to the influence of hybrid buildings on cities.

Likewise, the American architect Jesse Reiser (1999) argues that the interconnectivity and co-dependence of scales has far-reaching effects on architecture, and is especially integral to a new understanding of urbanism. As the loose and flexible condition of global economies reproduces itself at the urban scale, we see that the logic of flows does not restrict itself to the invisible exchanges of money and cultural signs among cities, but permeates the very material structures of cities and buildings. As a result, buildings and objects lose their identity. Their fluid and decentralised distribution participates in a singular form of urbanisation, which can be understood as an urbanism without architecture. This apparent retreat of architecture resumes architects' actual doubts and convictions concerning their own conception of urbanity demonstrating, I believe, that in order to comply with an urban condition increasingly dependent on global phenomena, they tend to imagine buildings as discrete and provisional forms, shaped by the perpetual interaction of global forces. Architects, such as Allen and Zaera-Polo, are therefore seeking out an architectural form that expresses the progressive slackening of the periphery and reproduces its flat and heterogeneous surface. Moreover, their attention shifts from architectural de-

sign to infrastructural design. That is, instead of looking at building as autonomous objects, they conceive of them as part of a large territory marked by intensified mobility. The primary role of buildings is not therefore to provide a symbolic meaning to this mobility, but to redirect it physically in accordance with the fluid and distressed condition of cities.

1.3 THE SPACE OF FLOWS: A NEW PARADIGM FOR ARCHITECTURE?

Enthusiasm for flows and fluid topographies appears to be a growing trend in architectural practice, concomitant with an increasing consciousness regarding global phenomena, and therefore reflecting a certain acceptance of society's recent mutations. This societal filiation is a rather new thing for architecture. We know that postmodernism drew most of its references from the arts, while deconstructivism was a literal transcription of philosophical discourses. After focussing on signs and information, architecture now appears to be redirecting itself towards more pragmatic and physical concerns. The actual interest in flows and infrastructures marks a shift away from the representational imperative of architecture and a return to instrumentality associated with a new concern for social and economic issues. Departing from the particular echo that we discern today between architecture and socio-economics, I propose to draw a parallel between Manuel Castells' concept of the space of flows, and architecture's recent interest in flows and fluid spaces. I argue that the space of flows provides a new paradigm for architecture and urban design, and can be viewed as a theoretical and operative toolbox to rethink urban and architectural disciplines.

The space of flows, argues Castells, is the spatial form of the network society, just as cities and regions were the spatial forms of the industrial society. The space of flows has thus become predominant only recently, arguably in the mid 1970s, and has since defined an unprecedented stage of society characterised by dynamic movement rather

than static location. My objective in this chapter is to understand what Castells means exactly by his concept of the space of flows. Castells defines a flow as “purposeful, repetitive, programmable sequences of exchange and interaction between physically disjointed positions held by social actors in the economic, political and symbolic structures of society” (1996, 410). This brief definition shows that the notion of flow encompasses more than movement. It also involves several processes, such as repetition, programming, exchange, interaction, and simultaneity. Hence, not every movement produces a flow; it also has to be repeated, directed, and physically supported. I also wish to question Castells’ position regarding the relation between flows and spaces, and assess the adequacy of his concept with the actual inclinations of contemporary architecture. I suggest that the idea of a space of flows connects architectural and socio-economic theories around the same difficult questions: what shapes, what forms, what spaces are now emerging from the intensification of global exchanges? I therefore argue that more and more architects and urban planners tend to conceive of buildings and cities as local and paradigmatic extensions of the global space of flows.

In order to develop my argument, I first draw an outline of the space of flows by drawing attention to its main attributes and defining the scope of its significance for urban space. Tracing the path that leads Castells to this actual formulation of the space of flows, I investigate both his references and his hypotheses. The first attribute of the space of flows lies in its network logic. Castells conceives of the space of flows as the “spatialisation” of today’s society, a society which is deeply infused by the complex and flexible morphology of the network. He thus extends Henri Lefebvre’s attempt to introduce space in social theory, and largely draws on his idea that modern space has followed an economic transition, leading to a new economy of flows. The second attribute of the space of flows relates to the simultaneity of social relationships that take place along communication networks. Historically, this simultaneity has always been associated with physical contiguity and to the fact that people need to be in the same place in order to interact. However, with the advent of new communication technologies, this social interaction can now occur across long distances. Defining space as the material support of social interaction, Castells maintains that communication networks construct a new type of space based on flows.

The third point concerns the role of global infrastructures. Global infrastructures are one of the most determinant aspects of the space of flows, for they provide the material support of social interaction. It is their geographical concentration that defines the scope and the physical limits of the space of flows. I therefore emphasise the effect of global flows on the organisation of cities and companies. The logic of flows entails both a process of dispersion and a process of concentration. Communication networks involve the decentralisation of companies, as well as the reinforcement of

existing geographical patterns, such as the dominance of a few global cities. If both processes seem to entail a certain hierarchy in the position of cities, it is also important to understand that this hierarchy is by no means fixed or stable. I then explain that, although flows possess directionality conferred by both their inherent intensity and the infrastructure that carries them, they remain fundamentally uncontrollable. As a consequence, localities are subject to an ever-changing geometry of flows, within which they struggle to find a proper place. Because of their weak position, cities are forced to implement ambitious and risky urban strategies. I conclude by questioning the dialectical opposition between flows and places that undermines the whole concept of the space of flows. According to Castells, the space flows is characterised by a schizophrenic structure that threatens to disconnect flows, people and places. I propose to demonstrate that today's architecture suggests a more optimistic view of the space of flows, where global flows and physical places intermingle and mutually constitute each other.

THE NETWORK SOCIETY

What does Manuel Castells understand exactly by the space of flows? Why is it different from previous spaces? How does it relate to the actual mutations of urban space? Castells constructs his concept of the space of flows as a "spatialisation" of the many interactions that occur through networks. For him, the space of flows is the new constitutive space of today's network society, arguing that the complex and flexible figure of the network has infused all levels of society, whether economic, social, or cultural. Most organisations today are configured through a series of complex networks in order to deal with the increasing versatility of markets and social relations. Cities develop in the form of large urban regions with multiple sub-centres, while companies are increasingly globalised, spreading their functional units across the globe. For Castells, new information and communication technologies, such as the Internet, have provided the material basis for the pervasive expansion of networks throughout the entire social structure. High-tech companies are certainly the organisations that are influenced the most by the network logic, but any place and any group of individuals using new communication infrastructures is similarly and automatically subject to the network logic. The network morphology thus applies to an increasing number of organisations, such as laboratories, universities and hospitals, which structure themselves in interactive networks of communication, be it between continents or between floors of the same buildings. It reorganises relationships between cities, people and companies to the extent where it actually defines their presence, or absence, in society.

Castells' emphasis on the spatial relevance of networks in society can be traced to Henry Lefebvre's early work on the production of space. Lefebvre (2000) develops the concept of spatialisation arguing that "we have passed from the production of things in space to the production of space itself" (285). For him, economies not only involve the production of objects and services, but also the production of space. Space is supported by social relations, but it is also producing, and produced by, social relations. Every society therefore produces its own type of space. Moreover, the use of space relates to an economic transition that Lefebvre describes as "an economy of flows", in which flows represent a generally increased mobility of material, labour, energy, and information. By raising the emergence of a global space of flows, Castells extends Lefebvre's fundamental work and further defines the space that is specifically produced by Lefebvre's economy of flows.

SIMULTANEITY IN TIME AND SPACE

The first and certainly most fundamental characteristic of the space of flows, as opposed to more traditional concepts of space, is that it relies on the simultaneity of events and social relationships more than on their contiguity. To support his argument, Castells develops a simple and quasi-mathematical equation. From the point of view of social theory, space is the material support of time-sharing practices; at the heart of it is the material articulation of these practices in simultaneous time. This definition of space is supported by British geographer Doreen Massey: "space is constructed out of interrelations, as the simultaneous coexistence of social interrelations. What makes a particular view of these social relations specifically spatial is their simultaneity" (1992, 80). The notion of simultaneity has been traditionally associated with that of contiguity, or proximity. But today, new long-distance interactions through communication networks tend to separate the simultaneity of practices from the notion of proximity. Instead, they relate this simultaneity to notions of flows and networks. We can now return to Castells' formulation of space: if space is truly the material support of simultaneous practices, and if society is increasingly constructed around flows, then there is a new spatial form emerging, one which can be defined as a space of flows. This new spatial form constructs itself from social relations that are detached from physical contiguity, and from the places we inhabit.

GLOBAL INFRASTRUCTURES

A second important feature of the space of flows is the physical network of communication infrastructure that allows global exchanges. The space of flows is not support-

ed by usual urban settlements, such as houses, buildings, streets or districts, but by a series of global infrastructures used to carry both electronic signs and hard copy information. Scott Lash and John Urry (1994, 25) consider in this respect six main media. The first consists of transportation infrastructures including motorways, airports, mail and express services. The second is co-axial cable; its bandwidth is large enough to carry images, voice and data. The third is the microwave channel; it has a large bandwidth, but is unreliable as its signals can be affected by atmospheric conditions. The fourth consists of earth satellites, which allow cheap transmission and are well suited for to remote or isolated areas. Finally, there is fibre-optic cable, which has a large bandwidth and boasts superior signal quality. The problem with the cable network is that it disadvantages isolated areas and accentuates the difference between connected and disconnected areas. Despite this disadvantage, the cable network remains the privileged infrastructure of the space of flows:

Although optic fibre networks depend on flows that connect two points through a line, their carrying capacity and accuracy are much greater, in particular when satellite signals need to go through the saturated space of metropolitan CBDs [central business districts]. (Castells 1989, 149)

It should be noted that high-speed trains are not actually included in this list, for railways seem to have lost the structural role they had during the industrial period. Hence, according to Castells, the fibre-optic network acts in the network economy very much like railways once did when they defined economic regions or national markets in the industrial economy. A fundamental and obvious difference lies in the fact that fibre-optic allows social interaction to occur from remote places.

DISPERSION AND CONCENTRATION

The third feature of the space of flows is a simultaneous process of concentration and dispersion of urban space. The main, and most expected, impact of telecommunication infrastructures is to make possible the scattered location of advanced services all around the world. Following this process of decentralisation, cities tend to develop as loosely interrelated exurban constellations that emphasise the interdependence of their districts over long distances and minimise the role of territorial contiguity. Castells explains, in this respect, that “flows of exchange are at the core of the American Edge City” (1996, 400) – and we could say by extension, of most urban peripheries. The second impact of the logic of flows on urban space is an antagonistic process of increasing concentration of economic and financial activities. In order to ex-

exploit the global reach of telecommunications, organisations situate themselves in areas where they have greatest access to an advanced infrastructure, at relatively affordable costs. This leads to the reinforcement of inherited patterns of centralisation in the higher nodal points of the information economy – namely, the central business districts of the largest metropolitan areas. Saskia Sassen (1991), in her book on global cities, shows that large metropolises such as New York, London, Tokyo, Paris, Frankfurt, Zurich, Amsterdam, Los Angeles, Sydney, or Hong Kong are characterised by the prominent role of their CBDs. The critical factor of their urban concentration is that it participates in an increasing polarisation of urban space:

The inner cities of large metropolitan areas concentrate not only the corporate headquarters and their support networks, but also the destitute and overexploited segments of the population resulting from the unbalanced restructuring of economy and society, in an increasingly explosive socio-spatial contradiction. On the other hand, alongside the centralization and metropolitanisation of information industries, there is also a process of decentralisation of service activities over regions, urban areas, and locations within the major metropolitan areas. (Castells 1989, 149)

The paradox here is that the urban matrix of big cities becomes increasingly differentiated in social terms, while being interrelated in new and different ways that go beyond physical contiguity. Castells explains that CBDs do not exist by themselves, but by way of their world-wide connection to the other similar districts. Large cities are therefore connected externally to global networks, while internally disconnecting local populations that are unnecessary to their economy. This results in a greater discontinuity of land use patterns and increasing fragmentation of the urban fabric. While public services, such as health and education, tend to follow the spatial distribution of the population they serve and have become increasingly suburbanised, advanced services related to telecommunication are increasingly concentrated within the CBDs of urban areas. The geography induced by the space of flows, therefore, is neither an effect of concentration, nor an effect of dispersion, but an intricate association between the two.

VARIABLE GEOMETRY

The fourth and last feature of the space of flows lies in its variable geometry. If the space of flows seems to reinforce an existing pattern of concentration dominated by a few global cities, the geographical hierarchy it induces is by no means definitive or stable. The new global economy creates a variable geometry of production and con-

sumption that denies the specific meaning of places. Hence, the meaning of a place does not exist outside its position in a network whose shape changes relentlessly in response to the fluctuation of the markets and the density and content of the signals exchanged; the notion of place is subject to constant changes as existing nodes temporarily gain or lose importance. Since the origin and destination of flows can neither be controlled nor predicted, the key issue becomes flexibility and adaptability to the potential and requirements of the networks of flows. Its absolute geographical position bears less importance than its position within global networks.

This situation, says Castells, applies to all localities. Cities and regions are therefore confronted to a new challenge. Their fate and position is increasingly dependent on the erratic trajectories of flows of capital or tourists. Meanwhile the production of social and cultural meaning continues to be locally specific, and each locality has to recognise the very linkage between its own specific location, its cultural character, its population and the global networks of exchange. Aware of this challenge, cities enter into fierce inter-urban competition, involving ambitious urban strategies and highly risky investments in both finance and real estate. Some cities are successful in their attempt to attract flows, and some are stripped of their former importance. “This urban roller coaster at different periods, across areas of the globe”, says Castells, “illustrates both the dependence and vulnerability of any locale, including major cities, to changing global flows” (1996, 382).

NETWORK REALITIES

Is it then possible, from this definition, to consider the space of flows as a new paradigm for architecture and urban design? Can we use it as a theoretical tool to redefine urban and architectural disciplines? The answer is surely ambivalent. For, the space of flows is a concept that both overcomes and enforces some of our mental barriers.

Castells’ argument, stemming from a very simple and logical equation about the space of flows, is particularly convincing. If every society produces its own kind of space, and today’s society is increasingly defined by flows, then it produces a new form of space: the space of flows. Castells’ view of space is fairly new for space has long been conceived of as a flat and neutral ground upon which objects, events and movements unfold. The space of flows thus helps us to imagine a space which is not different from what it contains. Rather, it suggests a space which is imbued with the physical properties of flows, existing as a result of the mediative properties of networks and their ability to enhance transactions and exchanges. Bruno Latour (1987) raises in this respect the difficulty that we often have when we try to consider a form of space that relates to the realities of networks:

Most of the difficulties we have in understanding science and technology proceeds from our belief that time and space exist independently in an unshakable frame of reference inside which events and place would occur. This belief makes it impossible to understand how different spaces and different times may be produced inside the networks built to mobilize, cumulate and recombine the world. (1987, 55)

Dealing with the same difficulty in defining space in relation to the internal organisation of communication networks, William Mitchell (1995) observes that networks have a topology, for it is possible to draw a map and define the nodes and main connections of a network. Yet, he refuses to believe that networks produce of a space of their own, declaring that networks are “fundamentally and profoundly antispacial” (8). The impression that networks are antispacial arises from our Cartesian conception of space, which continues to be utilised in architecture and urbanism. But as Bruno Latour remarks, this is a serious constraint to a more contemporary understanding of space. If we want to understand how communication networks turn into space, and what happens inside this resulting space, we need to understand them as real and not only as metaphors. The remarkable aspect of Castells’ space of flows, here, is that it overcomes the traditional intellectual barriers placed between flows, objects and space, and that it defines the logic of flows as a phenomenon that produces a new and very specific kind of space. The space of flows thus confronts architects and urban planners to a new form of space, which is in fact very similar to the fluid and topological space they try to achieve through their most recent projects.

Greg Lynn’s design works play, for instance, on the analogy between the virtual space of computer animation and the global space of the new economy. The submissive character of his projects relate in many ways to the weak position of localities within the space of flows. Just like cities in the new global economy, they are marked by the predominance of local deformations caused by the uncontrollable influence of a much larger space of flows. Their existence mainly lies on their capacity to respond to the forces that animate both their global and surrounding contexts. Although Greg Lynn simulates environmental forces, more than social and economic forces, he shares with Castells a conception of space where local forms and objects result from a multiplicity of interactions with external forces. When Lynn considers a virtual space of flows animated by moderating and directional forces, he (involuntarily) echoes Castells as he defines a global space of flows supporting transnational networks of movement and exchanges of information.

A particular aspect of the space of flows remains to be questioned. What about its local expression? What about its lived experience? Can we see it? Can we touch

it? Can we feel it? These are, in my opinion, some of the questions that Castells overlooks in his definition. His argument reflects a dialectical opposition between flows and places, placing the space of flows in opposition to the “historically rooted space of our common experience: the space of places” (1996, 378). While the space of flows seems to concentrate all forms of wealth and power, it simultaneously tends to separate them from the spatial realities we live in. Castells expresses his concern that the two spatial logics are becoming increasingly separated, and that while the space of flows extends its influence across the globe, places become estranged from each other, and increasingly compromised in their capacity to share cultural codes. The risk, for Castells, is that the dominant space of flows supersedes the space of places, reducing it to a fragmented landscape of disconnected places. This disconnection results in a structural schizophrenia breaking down communication channels in society and dividing the world between an elite of businessmen, and a marginal and sedentary population.

The problem with this rather pessimistic scenario is that Castells defines two forms of space – the space of flows and the space of places – developed as two distinct and parallel universes whose times do not meet (unless we build cultural and physical bridges between them). I believe that the space of flows does not necessarily involve such a dramatic end. The concern expressed by Castells is justified insofar as flows and places correspond to diametrically opposite entities. But haven't cities always been constituted by flows? And haven't flows always linked places to each other? The opposition between flows and places is the point that fundamentally disconnects Castells' space of flows from architects' space of flows. It is therefore arguable that Castells' concept of the space of flows corroborates architects' interest in flows and fluid urban conditions, as far as it does involve the opposition between flows and places.

BEYOND CORPORATE ARCHITECTURE

Castells relates the space of flows to the field of architecture, arguing that the space of flows implies a redefinition of architecture and urban design both in their form and function. Unfortunately, his argument falls short, as he highlights the symbolic function of corporate buildings in the new global economy and designates the post-modern style of international chains of hotels and conference centres as the very expression of the space of flows. In doing so, he defines architecture as the expression of a more or less unconscious abdication vis-à-vis capitalist forces and limits the influence of global flows on architecture to a mere matter of style and aesthetics. He overlooks the active position of architects and urban planners in the conception of cit-

ies and buildings and fails to acknowledge their reflexive and evolving contribution to the actual fabrication of cities. His concern with the symbolic aspects of architecture can be traced from his earlier work and its close connection to Henri Lefebvre's theoretical work on space, which is generally supported by the broader academic community. David Harvey, in particular, offers a compelling analysis of Manhattan towers as he opposes the modern aesthetic of the Trump Tower to the postmodern style of the AT&T building designed by Philip Johnson. In his analysis, he demonstrates that postmodernism coincides with the corporate image of many global companies and that postmodern architecture provides capital with the symbolic value that it misses, favouring the local fixation of transnational financial flows.

If postmodernism undeniably relates to corporate culture, I would argue that it does not necessarily relate to the space of flows for three primary reasons. Firstly, postmodernism is a highly American movement with a short period of influence in Europe. Harvey and Castells' arguments therefore may be valid, but predominantly in an American context. Secondly, as we have seen in previous chapters, architecture has moved away from semantic and symbolic issues, and postmodernist architecture has far less influence today than it did in the 1980s. Finally, the space of flows cannot, and should not, be reduced to a purely capitalist phenomenon. Although it certainly involves flows of money and finance, the information it carries is also, and in great part, cultural. I therefore suggest that the space of flows challenges architecture and urban design, but in ways that cannot be reduced to sole expression of postmodern architecture.

With regard to the architectural scene investigated in earlier chapters of this thesis, I identify a possible transposition between Castells' socio-economic space and the space promoted by contemporary architecture. Rem Koolhaas himself once explained that his urban scheme for Lille was an expression of the space of flows. Extending his argument, American critic Michael Speaks (1995) affirms that OMA's architecture thus explores the chaotic potential of the space of flows:

Koolhaas punctures the umbrella of forms, allowing a small turbulent stream of chaos through creating what Gilles Deleuze following James Joyce, calls a chaosmos, a composed chaos, neither foreseen nor preconceived.(...) Koolhaas thus discovers an order in the disorderly space of flows, and conversely the potential for creating freedom through limitation as in New York's grid, or Atlanta's zoning laws. (56)

If Koolhaas is particularly concerned with flows, it is mainly because his projects deal with large urban scales, or consist in large buildings containing a critical mass of ac-

tivities reproducing a sort of urban complexity. His strategy does not yet consist in creating more chaos, for which Koolhaas has often been criticised, but in accepting and rationalising existing complexities. With his “Big Buildings”, Koolhaas thus attempts to capture and proliferate the hidden forces of the space of flows informing the apparently chaotic condition of cities and urban landscapes:

OMA combines this rigorous analytical method with a logic of breaking and binding the space of flows to construct large-scale urban forms, fluid immersed social condensers which intervene in and reconfigure these flows. OMA has thus been crucially concerned with shaping fluid urban and post-urban movements, as with their project for the Zeebrugge Maritime Terminal, which gathers and redistributes the flow of sea and land traffic across the Channel, or the Kunsthal Art Museum in Rotterdam, whose undulatory system of ramps dissolves the clear distinctions between art and nature, commercial and leisure, creating an artificial world that is carried outward into its surrounds by its pedestrian traffic flows. (Speaks 57)

Speaks demonstrates here that it is not yet sufficient to accept the chaos created by erratic flows. The issue for architecture is to intervene in, and redirect, the space of flows.

The parallel that Speaks establishes between the space of flows and OMA’s architecture reveals, for me, a much more optimistic and convincing view than Castells’ own evocation of postmodern corporate architecture. In the previous chapters, it was argued that the intensification of global flows has had a determinant impact on the material organisation of cities and buildings, as it provided them with a more exogenous and fluid character. Urban peripheries can thus be viewed as a physical expression of the space of flows. It is also evident that architects have shown a growing interest in flows regardless of their scale. Lynn, OMA, FOA, Ito, Allen, and Reiser & Umemoto’s approaches can all be interpreted as an attempt to articulate the global logic of flows with the material condition of cities and to establish a loose and provisional fix between erratic forces and stable urban topographies.

Regarding both the influential presence of the space of flows in the field of contemporary architecture and its inherent contradictions, I propose in the following chapters to investigate the urban and architectural potential of the space of flows through a dialectic that considers flows and place as mutually constitutive entities. The space of flows, I argue, is not placeless, but rather stems from the multitude of localities that interact through its network of infrastructures. Flows have an origin and a destination, and their trajectories remain deeply governed by the multiple local

infrastructures that build together the Internet, the telephone network or the motorway system. The social relations occurring along these networks invoke a new internal space which is characterised by a fluid and flexible topology, and should be investigated as a space that is no less real than the physical spaces we inhabit.



PART

THE MOTORWAY AND THE EVERYDAY EXPERIENCE OF FLOWS

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← Map showing the itinerary of a 3 month exploration of the European network of motorways.

2.0 STATIONARAMA: A VIDEO CATALOGUE OF PETROL STATIONS

The following section investigates the phenomenological aspect of the logic of flows. How does it permeate our environment? How does it influence the realm of our daily lives? How does it affect our perception and our relation to urban spaces? How do places recreate themselves within generic spaces of transit? To understand the new forms of experience resulting from the intensification of flows, I propose to investigate the motorway, a network that may be viewed as a vast territory that cuts across borders and undermines the traditional meaning of places. The motorway supports flows that connect cities and regions on a global scale, but also constitutes a flow itself, a flow that is inhabited by a vast mass of motorised vehicles, signs and people. I aim to present the motorway as one particular example of the interdependent construction of flows and places.

Like the space of flows, the motorway is a spatial form that is constructed globally in order to optimise profits and reduce transportation costs, under a condition of stronger and stronger competition among cities and companies. It possesses a multiplicity of interchangeable centres that move along its infinite ramifications, in search of the next opportunity, the next domain to exploit. It exacerbates territorial instabilities and differences, and accelerates cycles of decline and obsolescence of places. Despite this analogy, the motorway does not accord with Castells' definition of the space of flows. For him, the few people who truly experience the physical ex-

pression of global flows belong to an elite of travellers who spend their lives circulating among exclusive networks of airport lounges and World Trade Centres. I propose to show that there exist many forms such as crowds, spaces of transit or traffic jams, which also define phenomenological expressions of global flows. These examples are drawn from a photographic survey of the European motorway network that I undertook in 2001.

My hypothesis posits the notion that the multiple human activities that animate petrol stations confer the flow of the motorway with a very urban character. It defines the motorway network as a new cross-border metropolis that questions the conventional opposition between flows and places, and instead presents a progressive conception of places, which embraces the fluid and dynamic properties of flows and the growing influence of global interaction on our lives.

EXPLORING THE INHABITED SPACE OF THE MOTORWAY

During the summer of 2001, I undertook a 3 month photographic survey of the network of European motorways. Driving through France, Italy, Switzerland, Austria, Germany, Denmark, Sweden, Norway, The Netherlands, Belgium and Luxembourg, I took more than 4000 pictures. My objective was to create a video catalogue, which would capture the raw aesthetic of motorways and the various human activities peculiar to its petrol stations.

In the early stages of this work, my hypothesis was that the shapes and uses of petrol stations were undergoing important variations, as the motorway was crossing national borders. Petrol stations thus appeared to develop notable differences, depending on the country in which they were situated. During the trip, I decided to change this hypothesis, believing that their standard character was a much more complex and fundamental feature. As a result of this shift of hypothesis, I did not develop an expected comparative study, presumably focussing on the different morphological features of petrol stations. I chose instead to undertake a more general approach, accepting the standard character of the motorway, yet concentrating on the multitude of signs and objects composing every single petrol station. I thus proposed to investigate another kind of difference, a difference which was both more fundamental and ambiguous, as it emerged from within the standard character of the motorway. The result of this approach is a video catalogue that takes the shape of a dynamic slide-show constituting a series of video loops, each depicting one of the numerous items standard to petrol stations. These items evoke a generic and universal motorway-language shared by all the countries and regions distributed along its infinitely ramified network.

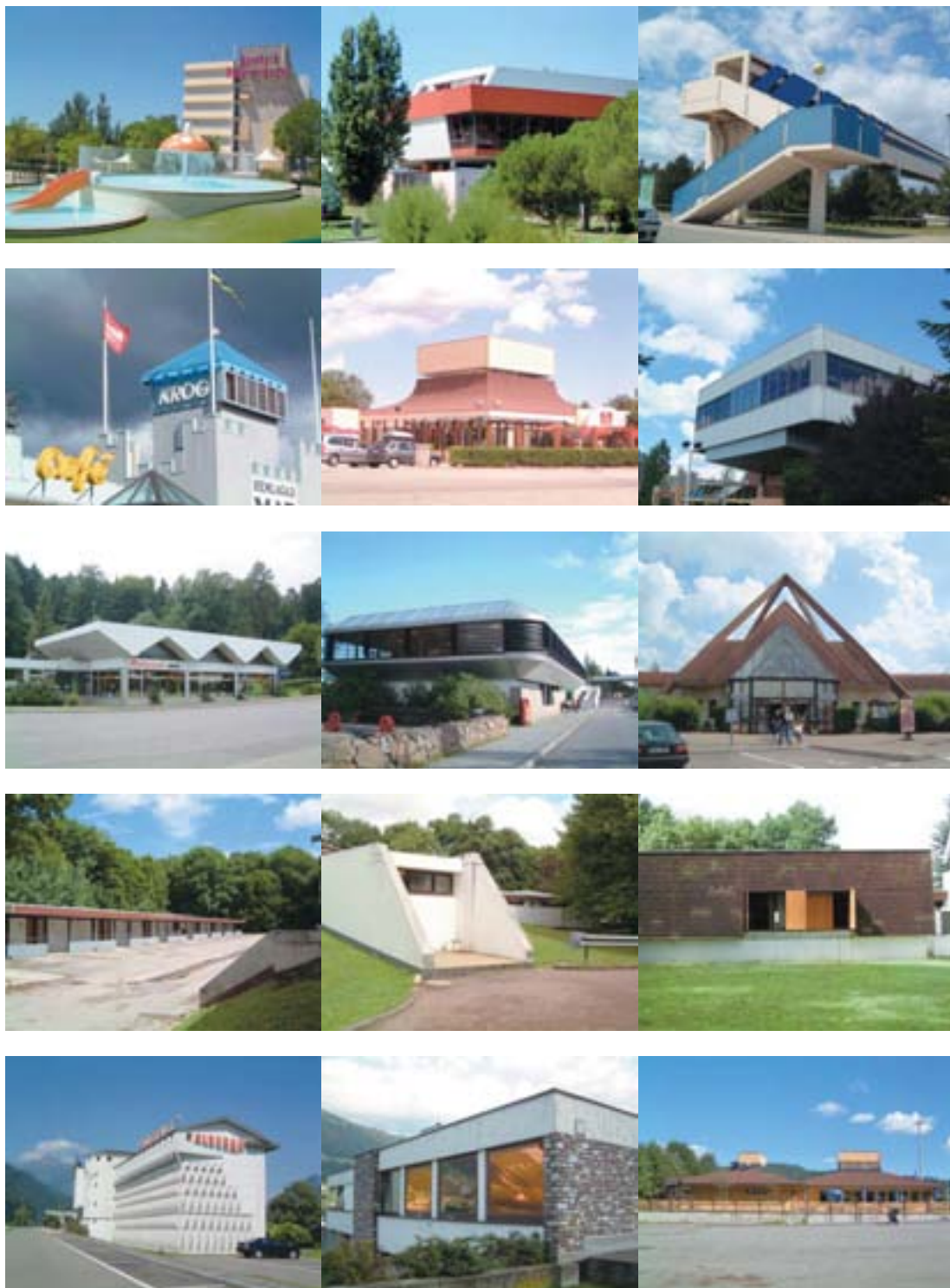


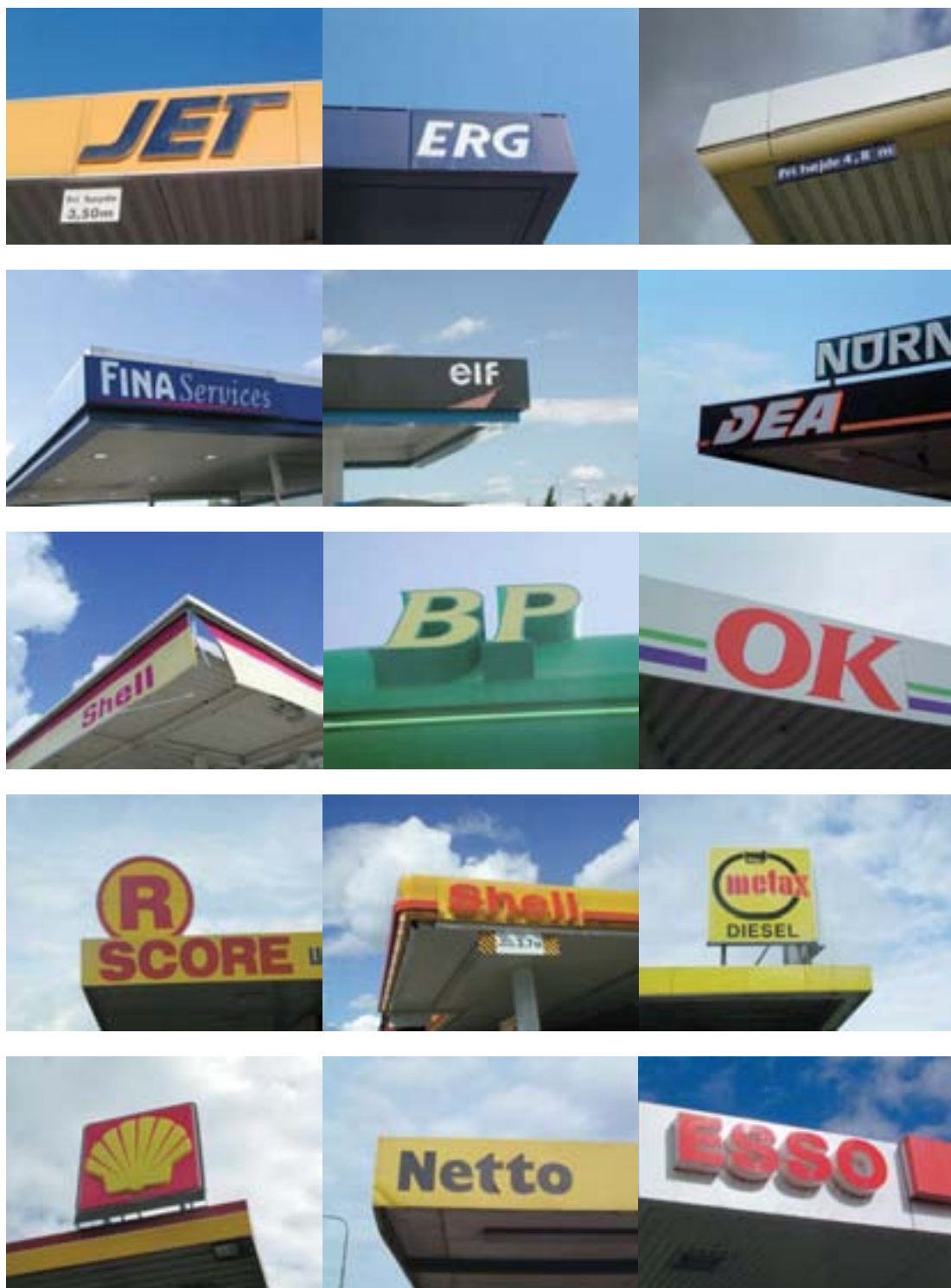


Before undertaking a more detailed investigation of the motorway, I shall outline the method underlying the objectives motivating my project, most notably the necessity of adopting an approach that embraces the transnational scale of the territory across which the motorway grid spreads. In order to investigate the subject's fluid and ramified nature, I developed a pictorial approach that focuses on a limited amount of signs and objects endlessly repeating themselves along the length of its route. That is, instead of looking at the motorway as a finite geographical entity, I chose to consider it as a process stemming from a minimal set of standard elements undergoing an infinite act of repetition and variation.

A bird-eye view gives the motorway network the appearance of a continuous and homogenous territory, transcending both national and cultural borders. The motorway unfolds like a spatial and semantic Esperanto cutting across and rendering obsolete all local expressions. Petrol stations first appear to reproduce themselves like the elementary modules of an invariable, impassive logic, a chain of bland monopolistic norms. But on a closer inspection, the motorway acquires a quite different face. We see, for instance, that petrol stations are never exactly the same. Their shape and meaning are possessed of subtle variations, provoked by unexpected local events, and items ostentatiously displayed in the adjacent shops and restaurants. The aim of the video catalogue is to uncover these many discrete differences, the oddities that both partake of the standard character of the motorway and disrupt its univocal uniformity.

This initial objective was thus to highlight the idiosyncratic differences that appear out of the cracks, so to speak, of the doggedly standard motorway infrastructure, and to show that its generic and univocal character needs to be comprehended from a local level – in effect, to examine the rule through a study of its exceptions. This is the reason why I have adopted a bottom-up approach, as opposed to the top-down approach traditionally used by geographers and cartographers. I have tried to develop a point of view which is compatible with a domain that is simultaneously specifically inhabited, and globally dispersed. Leaving behind the utopian vision of a synoptic and optimal angle of observation, I have opted to investigate the motorway as a phenomenon on a massive, continent-wide scale, by focusing on just a few signs and objects. My aim was not to draw a global map of Europe or define another blue banana (or any such new urban region), but to look at specific situations through the eyes of users, and thereby construct a lateral subjective vision disclosing the inhabited space of the motorway. To sum up, I would describe this survey as a search for individual codes, indices, samples and temporary indicators that reveal the various intimacies of the network. I have tried, in this respect, to take photographs with an awareness that, beyond the trash and banal aesthetic of service areas,





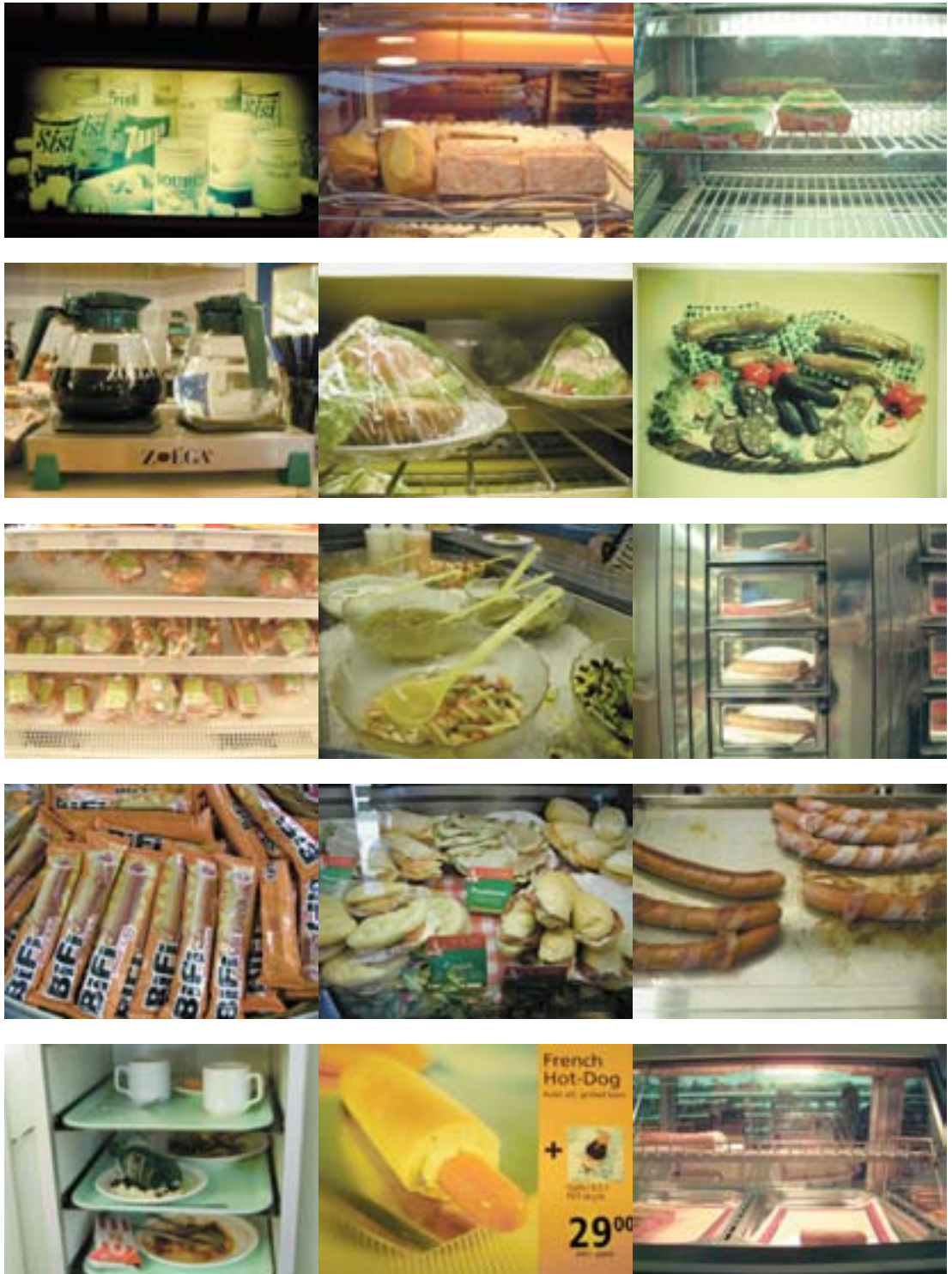


lies a discrete form of urbanity that manifests itself only through brief situations and behavioural instances that are never still or settled, but revelatory of the particular way people inhabit global flows.

METHOD: SAMPLING AND COMPILING

The various procedures I have implemented in creating the video catalogue, i.e. sampling, selecting, compiling, mixing, are all instrumental in dealing with the serial character of the motorway, and its large quantities of signs, objects, spaces and people. The first tool I use consists in a list of signs and objects that I have photographed in every petrol station. This list constitutes the index of the catalogue and includes a series of photographed subjects such as canopies, logos, car parks, furniture, people, keyboards, cash machines or detritus... All these items are omnipresent on motorways, but take on slightly different aesthetics, forms and uses, depending on the time and the place in which they occur. The first stage of the work aims therefore at identifying what repeats itself from station to station. We may define this as a process of photographic sampling. The underlying idea is to construct a database that is comprehensive enough to bring out the subtle differences that emerge during the perpetual repetition of signs and objects. Once on the motorway, the process of sampling switches to either zooming-in on some items of the catalogue's index, or taking snapshots of specific, and sometimes unexpected, situations. The index is kept as open and flexible as possible, so that fresh series can be continuously added to it. The index thus expands from station to station, suggesting that the number of standard items on the motorway is almost infinite. I have since realised that the sets of signs and objects that composed the index were far more numerous and complex than I imagined at first. The second stage consists in selecting and classifying the images. This is a process of compilation that aims at assembling images by affinity, or resemblance, highlighting especially those that do not fit an exact theme. Once stored in their respective folders, the series are assembled and printed on different contact sheets. The whole process thus builds up into a quasi-semantic encyclopaedia of the generic vocabulary of the motorway. Its language is broken down into minimal entities, akin to words or phonemes. The advantage of this organisation is that, although it abstracts notions of time and place, it also reveals both the uniformities and the differences that occur among signs and objects. The third stage consists in transferring the series of photographs to a video format, such that each is turned into a mini slide-show, the speed and sequencing of which is modulated according to a musical loop, eventually producing short open-ended video loops. The last stage consists in putting the video loops onto a web site, so as to create a globally consultable catalogue.









The loops are assembled into a “mix page” whereby an arrangement of different screens allows one to play the loops independently, or simultaneously. Visitors are thus empowered to create their own video mixes.

MAPPING THE STANDARD WORLD OF THE MOTORWAY

Why give this photographic survey the form of a catalogue? The first reason relates to the undeniably serial and digital nature of motorways. The catalogue format allows one to present the survey both as a cold statistical repertoire of the many signs and objects that compose the motorway network, and also as a reportage of images revealing its banal aesthetic. The form offers, in this respect, the possibility of creating an effect of dense, physical accumulation that evokes a virtual European metropolis spreading over thousands and thousands of kilometres, composed solely of expressways and service areas.

The second reason for employing the catalogue format is because it addresses the notion of catalogue itself, and the way it is used in architectural practices. The catalogue is an object that is emblematic of the process of standardisation that continues to shape more and more products in the fields of building and design. It is an important tool for architects, whose work in large parts consists in choosing and assembling pre-existing systems, objects and materials of every sort. With this in mind, the making of a catalogue of petrol stations is a way of mapping the designed and industrialised world of the motorway, as well as the many standards, codes, norms and expert systems that feed into the practice of architecture and design. A catalogue is not only a means of mass consumption; it is also an effective device that we all use in order to deal with the growing number of standardised objects. In an architect's office, it first appears as a methodical list, accompanied by technical specifications and instruction details. But as catalogues, today, include an increasing number of illustrations, portraying well-designed and already manufactured objects, they also serve as particularly efficient devices for deciphering and exploring, akin to a census or a classification system. Hence, architecture today owes more to the mail-order catalogue than to Alberti's treatise. The catalogue delimits the world of the available; it lists everything that can be assembled, re-routed and layered in a realistic, economical fashion. It shows that, although architecture remains a rather low-tech form of production, the products that architects use to design buildings and urban spaces increasingly partake of a global economy, managed on a world-wide scale. The making of a catalogue refers, therefore, to a design approach that consists in using what is available. The kind of standardisation a catalogue implies does not necessarily lead to recreating identical environments all over the world, but also to making things compatible



and subject to multiple updates and transformations. One of my objectives in compiling this catalogue is to demonstrate that the process of standardisation that shapes our post-industrial society creates more differences than it erases.

NOTE

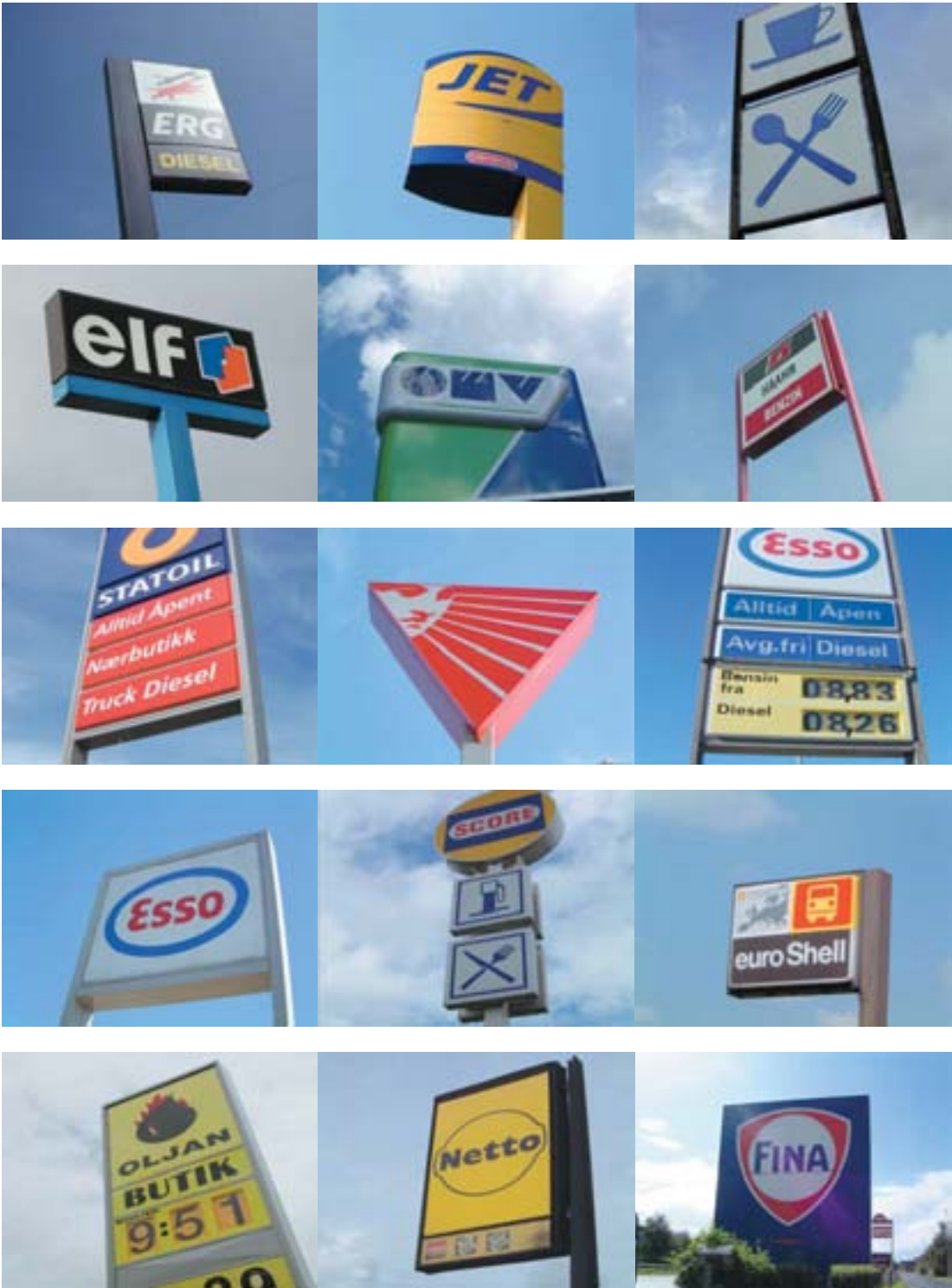
Statorama: the Video Catalogue of Petrol Stations in Europe can be found on the Internet at <http://statorama.free.fr>. It has been shown on the TV channel Cult Network Italia, and presented at the following events:

- Betacity, HMKV Videoprogramm, Dortmund, Germany, June 2005
- BO 2, festival international festival of visual arts and innovative music, Toulouse, May 2005
- Deluxe Gallery, Hoxton Square, London, England, March 2005
- Projection M_Multimedia/16, Turin, Italy, January 2005
- Cinématocronomisonore n°1. Video night, OPA, Paris, France, February 2005
- Exhibition Novi Medji, Museum of Contemporary arts, Belgrade, Serbia, October 2004
- Artronica, Bogota, Columbia, October 2004
- Medienhaus Hannover, Germany, June 2004
- MAP, Japan media art festival, Tokyo, Japan, March 2005
- Projection M_Multimedia/16, Turin, Italy, January 2005
- Cinématocronomisonore n°1, Video night, OPA, Paris, France, February 2005
- Exhibition Novi Medji, Contemporary Art Museum, Belgrade, Serbia, October 2004
- Microwave, international festival of art and media, Hong Kong City Hall, China, October 2004
- Plug.in, centre of art and media, Basel, Switzerland, March 2004
- Kino-Lab festival, Warshaw, Poland, March 2004
- Electrofringe festival, Newcastle, Australia, September 2004
- Festival Signes de Nuit n° 2, Paris, March 2004
- Alternative Mobility Futures conference, Lancaster University, England, January 2004
- 100th annual congress of American Geographers, Philadelphia, United States, March 2004
- European Urban Cultures conference, Manchester Metropolitan University, England, March 2003
- Symposium La Métropole des Infrastructures, Paris, France, December 2003
- Transmediale Festival of Electronic Arts, Berlin, Germany, January 2004
- Congress Il Progetto Video, Politecnico di Milano School of Architecture, Italy, January 2004
- Artexpo 04 Mexico exhibition. Solaris/observatorio, Mexico city, Mexico, February 2004
- Seminar GRES-CEAQ Sorbonne, school of Architecture Paris-la-Villette, Paris, France, February 2004
- First International Biennale of Rotterdam, Rotterdam, Netherlands, May 2003
- Graz Biennale of Architecture and Media, Austria, December 2003
- Zoo, centre for contemporary culture, Catania, Italy, November 2003
- Florence Film Festival on Architecture, Beyond Media 03, Faculty of architecture, Florence University, Italy, October 2003
- Monthly video projection “L’Autre Video”, Paris, France, November 2003.











2.1 FROM FLOW TO PLACE

From the moment I got into my car, I dealt only with cash machines, petrol stations and a few chains of restaurants. Although I crossed many borders, roads remained the same size, the width of the reflection lines, the signs, the intensity of the backlights of the cars, all remained unremittingly uniform. Even the cars were almost the same. Everything was perfectly standard and homogenous. All the petrol stations that I stopped at seemed familiar, as if I had already been there before. The endless repetition of their logos and canopies, all along the road, gave me a reassuring feeling of recognition. As I would call my friends and family, I could almost feel at home, because everything I saw along the road could also be found back home. In fact, the only things I had to use were generic infrastructures: the motorway and its services, my mobile phone, my credit card... These infrastructures were so well integrated and intertwined with one another that I was hardly aware of my use of and reliance upon them. But, the feeling of recognition and familiarity that came from being immersed in these generic infrastructures coincided with another feeling, that of being continuously observed and controlled. As I withdrew money from an ATM, it occurred to me that my credit was being checked while video cameras filmed my every move. Everywhere I went, small stickers on gas pumps, cash machines, and shop windows warned that criminal activity would be prosecuted to the fullest extent of the law. Meanwhile, the roadside was replete with signs giving instructions, directions,

cautions, and warnings. At one point, I was even commanded to slow down by the sudden flashing of a warning sign linked to an automated speed monitor. I then realised that all the recurring signs and monitoring devices punctuating my trip were actually part of the same security apparatus. I could have been terrified, yet I felt terribly safe. This experience of driving on the motorway all through Europe gave me the feeling that I was like a micro-particle within a vast flow of people and signs, the statistical unit of a repetitive and programmed sequence of exchange, cutting across borders, and tying cities and countries together in a global space of flows. Drawing on this experience, I shall try to take up the phenomenological aspect of the space of flows, and show how flows and places mutually constitute each other, even in the most generic spaces.

In the previous section of this thesis, we have seen how the recent intensification of economic exchanges and social interaction on a global scale has created a new spatial form dominated by a logic of flows. This logic has deeply affected the position and the shape of cities. Its major influence on cities has been the rise and strengthening of some major world cities like Tokyo, London, and New York, and the weakening position of secondary cities, concomitant with their horizontal sprawl over endless peripheries. Yet, a question remains: how does the global logic of flows translate into the production of our everyday built environment? How does it permeate down to urban realities and affect our experience of places? To answer this question I will draw upon Manuel Castells' concept of the space of flows and relate it to Marc Augé's notion of "non-places", arguing that there is a correlation between the spatial manifestation of flows and the many spaces of transit that emerge along networks of transportation. These non-places, as Augé calls them, are spaces we move through as we drive down a motorway or wander through supermarkets. Although they rely extensively on the standardisation of space and the correlative control of the people passing through, these transitory spaces constitute, in my sense, a new category of public place. In this chapter, I propose to link the global space of flows, which Castells opposes to the real space of places, and the many places of transit that flank the motorway, around notions of control and standardisation. I shall suggest that although both processes can be understood as the necessary means to deal with the erratic character of flows, they do not actually prevent the emergence of new social places.

My aim here is to excavate the real experience of global flows, by stating the fact that, despite Castells' argument, they intersect the physical realm of our everyday lives. I propose to extend the physical manifestation of the logic of flows, which he describes as the elitist and secluded airports' VIP lounges and international hotels to a more inclusive and open arena. Thus, even though Castells sees a material expression of the space of flows in the a-cultural and a-historical postmodern archi-

texture of global cities, he manoeuvres around questions concerning everyday material experiences. For Castells, the ostentatious architecture of banks and international corporations archetypically symbolises the pre-eminence of the network society. While this is a pertinent aspect of the articulation between urban spaces and the logic of flows, his argument fails to capture the integral role of discrete transitory spaces in this articulation. If transitory spaces do not appear in his argument, we can assume that it is because they carry little symbolic value. We are so accustomed to their presence, it would seem, that we do not even notice them; and their banality makes them so invisible that we sometimes fail to recognise their social and cultural relevance. Instead of considering the places we inhabit when we are driving our car, or sitting in airport lounges, as the Freudian slips of a collective unconscious, I wish to look at them as deliberate responses to global phenomena, as natural expressions of how flows tend to materialise in urban space. I shall then demonstrate how the logic of flows permeates down through the whole realm of lived experience, within the boundaries of physical contiguity. My experience of the motorway and its numerous spaces of transit, thus rejects any opposition between flows and places, rather suggesting that during certain intervals of space and time, we directly live in the flow, and that the common urban places we inhabit do not remain untouched by, nor radically opposed to the expanding logic of flows.

To proceed, I first draw on Doreen Massey's idea of a new "global sense of place" to develop a possible conception of space that does not necessarily oppose the growing influence of global interaction. I then comment on how, according to Castells, the space of flows affects major urban agglomerations, necessitating the development of massive infrastructures, such as the motorway. The latter are indeed the primary means for both supporting and articulating flows. I then argue that the place-based influence of the logic of flows, if it is explicitly described in the case of world cities, is in fact not limited to a few dominant nodes. On the contrary, its logic is discretely diffused among transitory places often situated at the margins of infrastructures. I shall argue that the standardisation of these places of transit provides us with new cognitive assurances. With the sphere of our experienced environment being extensively enlarged in scale, the recurrence of identical signs and objects, allows for a generic quality of space that makes us feel at home wherever we are in the world. These new cognitive assurances, which rely on the relentless self-similarity of generic spaces, become a key to the transition between space and place.

The flip side of the standardisation of space, however, is the increased control of individuals whose use of transitory spaces is extensively mediated and regulated by signs. On the motorway, the countless texts and slogans displayed on screens, signboards or posters, make the rules attached to these spaces so explicit that they prevent

all actions that may interfere with the strict functioning of transit. I will attempt to explain below why this narrow mediation affect all possibilities of interaction, deviance, and conflict. My thesis is that intensified control, as well as further features of the motorway, such as the abstract and standard character of its space, are intended as a response to the erratic nature of flows and to the instabilities inherent to their wild and variable geometry. This theoretical loop will hopefully extend Castells' concept to the idea that the motorway involves a daily and definitely physical experience of global flows.

A GLOBAL SENSE OF PLACE

In order to relate the logic of flows to urban processes, Castells concentrates in particular on global cities, as the major sites of the production of flows. Indeed, cities in the post-industrial economy thrive upon a diversified flow of tourists, capital and subsidies. The dependence of cities on flows is not a new thing in itself; yet the nature of these flows has changed, and their intensity has dramatically increased in the last half of the century. New theories have emerged which attempt to articulate the relationship between global flows and urban spaces, and by introducing the concept of the space of flows, Manuel Castells provides such a theory. He argues that the recent intensification of global exchanges has created a global space of flows, which tends to supersede the traditional space of places (Castells 1989, 348). Whereas the space of places still rests on notions of proximity and physical contiguity, the new space of flows relies on the simultaneity of events and interaction over long distances. If this dialectical opposition between flows and places is taken as truth, the space of place and true experience, preserving the possible making of identity should inexorably shrink, and dangerously dilute the space of our everyday lives.

I have already argued that this fundamental opposition between flows and places, remains, in my view, too reductive to introduce a progressive conception of places. Another option is to turn this radical opposition into a question of balancing different degrees of connectedness within a spectrum. Instead of regarding places as static, we can view them as being imbued with the fluid and dynamic properties of flows, and as expressive of the growing influence of global interaction on our lives. Places construct themselves from the specific convergence of various networks and relations, respectively relating to different scales of involvement. But as they are increasingly crossed by investment flows, cultural influences, and satellite TV networks, they realign themselves in relation to the new global processes. From this conception of places, Doreen Massey (1996) argues that it is possible to envisage places in a sense which is not strictly opposed to their outside. She asserts that:

in an era when you can go abroad and find the same shops, the same music as at home, or eat your favourite foreign-holiday food at a restaurant down the road – and when everyone has a different experience of all this, it is possible to develop a sense of place which is progressive; not only self-enclosing and defensive, but outward-looking and extraverted. (151)

Places, she says, can be imagined as particular moments in networks of social relations and experiences constructed on a far larger scale than the place itself – whether the given place is a street, a region, or I would say, a singular point within the widely diffused network of the motorway. Therefore, we should not think of places through a simple counterposition to their outside, or through a strict opposition to the growing influence of global flows, because it is precisely the relations to this outside which define their shape and identity.

Elaborating on my experience of the motorway, I wish to develop a sense of place which is adequate to a space of global flows where we travel more frequently and for longer distances. The network of motorways is so globally diffused that it simply cannot be comprehensively mapped; yet it recreates places, and provides us with an adequately progressive sense of place that is compatible with the global space of flows and the feelings and experiences it gives rise to. Thus, I think that it is possible through the observation of the motorway and its network of petrol stations to envisage an alternative interpretation of places, one that aligns more closely with what Massey calls a new “global sense of place”.

GENERIC INFRASTRUCTURE AND NON-PLACES

I shall now turn to the evidence that the motorway creates many places enabling us to experience the everyday materiality of the space of flows. The motorway belongs to the category of transitory places, which Marc Augé (1995) defines as non-places. To define non-places, Augé uses the concept of supermodernity – a concept which relates to Castells’ network economy in that it is also based on the excess of information (1989, 136). Yet Augé adds two more figures of excess: the excess of events and the excess of space (30). For him, the excess of space is paradoxically correlative with global connectedness and the resulting shrinking of the planet. The excess of events refers to the increasing amount of cultural signs and images we have access to through the media. Indeed, the more every single part of the world is interconnected by networks, the more we experience simultaneous visions of an event taking place on the other side of the planet, such as the Olympic games, or the war in Iraq. By adding the excess of space and events to Castells’ excess of information, Augé

raises the aspect of the network economy which we can feel and experience, both physically and emotionally. He thus manages to link abstract processes of delocalisation and long distance interaction to the concrete production of space, and more specifically to the proliferation of spaces of transit.

Non-places are not themselves anthropological places, he says, because they neither include memory of any particular position, nor integrate the traditional places of history (such as Castells' space of place). Instead non-places partake of:

a world where people are born in the clinic and die in a hospital, where transit points and temporary abodes are proliferating under luxurious or inhuman conditions (hotel chains and squats, holiday clubs and refugee camps, shantytowns threatened with demolition or doomed to festering longevity); where a dense network of means of transport which are also inhabited spaces is developing; where the habitué of supermarkets, slot machines and credit cards communicate wordlessly, through gestures, with an abstract, unmediated commerce... (78)

The motorway is perhaps the archetypal example of non-places. But non-places, according to Augé's definition, include much more than the spaces travelled exclusively by tourists and commuters. The motorway and the different networks involved in the movement of people and goods intersect with many other networks such as publicity and advertising apparatuses. These networks intermingle and accumulate into a complex system that stretches out to the furthest reaches of communication media. Non-places find their breeding ground along the complex and ubiquitous systems of infrastructure that support the flows of goods, people, and information. They occur along the extended trajectories of communication and transportation networks, and belong to the vast realm of generic infrastructure. They are integral to the global mediascape of newspapers and magazines, as well as the places where one buys them.

EFFECTS OF RECOGNITION

Within the ever-expanding sphere of our experienced environment, a certain recurrence of familiar images and a generic quality of space helps us to feel at home wherever we are in the world. As it involves an endless repetition of similar signs and objects, the motorway also produces "effects of recognition" that provide us with "new cognitive assurances" (Augé, 106). Indeed, the recurrence of billboards, petrol stations and restaurant chains along the motorway acts like a semantic and spatial Esperanto, allowing foreigners to feel at home no matter where they are. The diversi-

ty of visual feelings that we experience along the motorway – “the colour variations in the fluorescent lighting of an office building just before sunset, the subtleties of the slightly different whites of an illuminated sign at night” (Koolhaas 1995, 1250), the curves of an interchange, the different degrees of reflection of a glass façade, the Helvetica letters of the signs sequencing our transit through peripheral commercial zones – have come to participate in a recursive and now global aesthetic of periurban space. If this generic aesthetic is often perceived as alienating, especially when it invades our most intimate spaces, it also becomes familiar and reassuring as we experience it far away from home.

Since they are indiscriminately spread over millions of kilometres of networks, the signs and places that punctuate the motorway resist simple mapping. Nonetheless, their recurrence and ubiquity points to a new urban condition which is simply not discerning of local singularity – a generic condition which shapes peripheries and large urban regions indiscriminately, all over the world. This new generic urban condition no longer constructs itself through local differences, but through the recurrence of signs and the repetition of identical urban patterns on a global scale. We might think that the motorway only produces a uniform and homogenous space with no marks and no points of reference. But the recurrence of its signs and spaces builds up its own system of reference, and allows for a new kind of identity which is not based on the singularity of places anymore, but on their repetition.

Such global effects of recognition illustrate the fact that the aesthetic carried by the motorway takes part in a ubiquitous mediascape which stretches urban space out to the global scale of communication networks. Here, the term mediascape particularly highlights the fading distinction between the physical means of transportation, communication media, such as magazines and radio stations, and the images they carry. Arjun Appadurai (1993), in an account of the cultural dimensions of globalisation, refers to the notion of mediascape both in terms of:

the distribution of the electronic capabilities to produce and disseminate information (newspapers, magazines, television stations, film production studios, etc.) which are now available to a growing number of private and public interests throughout the world; and the images of the world created by these media. (330)

Similar to Appadurai’s definition of mediascape, the motorway illustrates a convergence between the physical media (and the places we physically experience) and the various images, sounds and aesthetics it diffuses. As the distribution of news and adverts on TV and covers of magazines, on the one hand, and the physical means of trans-

port or leisure, on the other, interact and intersect each other in service areas, the motorway suddenly re-positions the concept of urbanity into a much wider arena: an arena which includes a wide range of transitory spaces intrinsically associated with the familiar images and generic aesthetic they carry. The motorway and its service areas thus come to represent the symptomatic stretching of identical and now familiar urban images across the world.

Although the signs of the motorway seem identical, they still constitute reassuring patterns, and therefore carry a sort of identity – an identity that is based, once again, on repetition rather than on specificity. They constitute the now “obligatory” generic part of places which allows strangers to find a reassuring familiarity of images as they pass through them. Like recurring clichés, images and places that have been so widely disseminated that they have become “common-places”, they construct a world of their own. This is a world that we inevitably come to experience in our everyday lives, – a point of reference with which we identify when we travel or live abroad. Again, this conception weakens Castells’ primary distinction between a generic space of flows, and a space of place and everyday experience. The motorway resists this opposition as it articulates the dominant logic of global flows of information and images into a new global sense of place.

TEXTS, ABSTRACTION, AND CONTROL OF SPACE

Another notable feature of the motorway is the increasing controlled relationship between individuals and their surroundings. On the motorway, the link between individuals and the space through which they move is extensively established by the mediation of words and written signs. The motorway is thus characterised by a very digital landscape, where written signs and icons supersede the analogical, or what may be viewed as a pictorial dimension of the landscape. We are well aware that particular words evoke strong images of places. Augé argues that many places are abstracted by the very text that portrays them, because their textual portrayal supersedes their physical reality. Indeed, “certain places exist only through the words that evoke them and, in this sense, they are non-places, or rather, imaginary places: banal utopias, clichés like Tahiti or Marrakech” (Augé, 95). But the textual abstraction of the motorway does not only refer to clichés and far-off places. The many instructions for use, be they prescriptive, prohibitive, or informative – fasten your seat belt, slow down, enter your code – participate in its very definition. Thus, if we agree that these are the rules which define a place, set its limits and distinguish it from others, then we can say, in turn, that the function of signs and texts displayed along the motorway is to transmit the rules that define it. It is not accidental therefore that most

of the signs encountered on the motorway refer to a ruling organisation – the state, the city, or the private company that owns the petrol station.

This establishes the traffic conditions of spaces in which individuals are supposed to interact only with texts, whose proponents are not individuals but “moral entities” or institutions (airports, airlines, Ministry of Transport, commercial companies, traffic police, municipal councils); sometimes their presence is explicitly stated (“...the state is working to improve your living conditions”), sometimes it is only vaguely discernible behind the injunctions, advice, commentaries, messages transmitted by the innumerable supports (signboards, screens, posters) that form an integral part of the contemporary landscape. (Augé, 96)

The replacement of place by digits, words, phrases or icons is symptomatic of an abstraction of places. But if written signs, on one hand, inevitably undo certain places and abstract them from their reality, on the other side, they actively shape the space of the motorway by addressing customers or travellers in very explicit terms. When texts have the function of setting the rules of behaviour that define the motorway, then it becomes clear that they induce a very unambiguous mediation, primarily meant to simplify the reading of its space and control the movement of cars and people. This control through signs and texts is not the exclusive attribute of the motorway. It is also obvious in airports. With their voice-recorded signals, their colour-coded maps and signs, airports have become perhaps the most intensively regulated zone of common experience.

The combined threats of narcotics and terror have given rise to unprecedented levels of policing and surveillance. Credit and passport checks, magnetic screening, irradiation of luggage, baleful agents vetting security profiles, sniffer dogs: such are the quotidian experiences of air travel. Indeed, every year billions of people pass through the airport security apparatus, terrified and terribly safe all at once. (Sorkin, 221)

Texts on the motorway, like in airports, make rules explicit and commonsensical. It is understandable that these rules must be as basic and universal as possible since the motorway is meant to address individuals of many nationalities or cultures. As a result of this minimisation of interpretation, however, all movements or interpretations that may interfere with the primary and intended functions of the motorway are, indeed, very limited. Thus, what Augé underscores with his discussion on texts

and signs is that their extensive display in spaces of transit is not only symptomatic of an excess of information but also of an excess of control.

A RESPONSE TO ERRATIC FLOWS

In summary, two main features characterise the space of the motorway. First, a process of standardisation results in an effect of recognition. The recurring signs and aesthetic of the motorway, indiscriminate of the surrounding context, creates the homey feeling of the foreigner wherever she/he finds familiar chains of hotels and petrol stations. Second, the textual abstraction and the excess of control of its users regulate the scope of action and restrict eventual initiatives. These features are complementary in that they both constitute a response to the unpredictable trajectories and the erratic nature of flows shaping the space of the motorway.

My argument here is that these remarkable characteristics justify themselves by being more or less explicit responses to the feeling of uncertainty which is intrinsically present in the logic of flows. As Castells describes it, the variable geometry of the space of flows engenders an increasingly weakened position of locale within the global economy. Indeed, the space of flows is characterised by a paradoxical structure; although its hierarchy is strongly anchored in the prominent role of world-cities, second and third ranking cities or regions hold a very unsure position. Cities and regions can either reach higher ranks if they succeed in attracting more and more flows of capital, tourists or European subsidies, or be stripped of their former importance. This occurs through processes of connection and disconnection that imply that cities, choosing to put their name on the world map, undertake risky strategies, and therefore accept a high dimension of uncertainty. The risk especially lies in the fact that they link their fate to the convergence of flows of money and people, the trajectories and content of which bear important variations in time. Indeed, the variable geometry of the space of flows described by Castells, includes not only big companies but also locales, which have uncertain positions and therefore have to get involved in risky ventures to improve or simply sustain their former position. The notion of uncertainty, therefore, is intrinsically present in the logic of flows.

The cosmology created by the reproduction of similar signs and objects in the motorway plays extensively on the uncertainty and the risks involved in the movement of people, by nurturing a reassuring role for the car driver. Thus, the global banality of the motorway reduces differences among regions and countries and recalls home to the traveller. Furthermore, texts tend to reduce the risks of human malfunction and the feeling of uncertainty by setting predetermined directions whereby risk has been most explicitly and visibly eliminated. On the surface of the motorway, arrows

replace the physical topography to indicate the limited number of choices – right, left, straight ahead. The limits of safety are therefore clearly indicated by means of texts and standards, ensuring that the efforts of motorway companies are made visible. Moreover, car drivers have no other choice but to trust them and maintain a purely contractual relation with their surroundings, with signs as a reminder of the existence of an implicit contract.

The numerous signs and texts displayed along the motorway act therefore like an insurance system which attempts to avoid physical risks by setting up a system of precautionary rules. Meanwhile, the aesthetic standardisation of the motorway acts as the visible proof that maximum attention has been paid to diminish the risks, and reassure the traveller. Both the control that is exercised over people and the process of standardisation represent the regulations that are necessary to reduce the risks related to the wide-ranging movements and uncontrollable trajectories of people, goods, and information. If we definitively consider the places of transit that punctuate the motorway as points of access through which the logic of flows enters into our spatial experience of everyday life, then their functions of control and standardisation can be considered as the responses to the perpetual variations of these flows. They draw the theoretical link between the digital character of the motorway and the variable geometry of the space of flows.

DWELLING IN MOBILITY

Augé's non-places represent, in my view, a spatial condition that emerges each time locales need to connect themselves to transnational networks and establish a generic condition. Yet, this generic condition never exists in pure form. Non-places should not therefore be regarded as a concept that stands in opposition to a culturally grounded notion of place. Regarding my experience of the motorway and the social interaction that occurs in petrol stations, I would argue that places recreate themselves within them.

Petrol stations are symptomatic of the making of non-places into places, notably through a transgression of the strict rules of transit. Thus, if the transgressions of the rules are constitutive of the intrinsic instability of global flows, they also come as an opportunistic response to their uncertainty, suggesting an alternative use of spaces of transit. Each time an unpredictable event occurs on the motorway – a strike or an accident –, each time a country closes its borders, the rules of movement are contradicted and the logic of flows is partially disrupted or reoriented. This happens too when individuals or communities attempt to settle temporarily in petrol stations; they transgress their strict function of transit, and respond to the insta-

bility of flows by opening-up new ways of inhabiting the flow of the motorway. For instance, when gypsies, truckers or small groups of tourists set up temporary camps, they transgress the rules meant to ensure the obligatory movement of the motorway, and extend its strict functions to new improvised practices, individual or collective. Like J. G. Ballard's characters in *Crash* and *Concrete Island*, who express their sexual fantasies and obsessions in car parks, hospitals, motorway interchanges and airport terminals, like Nabokov's "Humbert" and his nymphette, in the last chapter of *Lolita*, who drive around 50s America from motel to motel, or Julio Cortazar who undertakes a month-long exploration of the Paris–Marseilles "autoroute du soleil", they raise the marginal and unexpected uses of the motorway, and show evidence of possible strategies of subversion. They show that standardisation and control are never complete, and never foreclose upon the potential for transgression which they attempt to mitigate against. They raise the fact that the cognitive assurance planned by the experts attempting to control flows and the cognitive assurance for those using the motorway collide and conflict in many instances, and that this collision becomes a key to the transition between space and place.

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If the hypothesis of a global space of flows, cutting across borders and tying cities and countries together, seems to be largely accepted today, it still says very little about how it affects our banal experience of urban space. Does it mean that the physical space of cities is being replaced by the virtual hyperspace of the Internet, or does it mean that the new global space of business elites literally supersedes the concrete space we inhabit? In this chapter, I have argued that these narrow and reductive approaches were not the only the way to comprehend the influence of global flows on places. I have tried to show that the virtual and abstract space of economic flows constructs our everyday experiences in very material ways, and that it inevitably ends up producing new categories of places, which we experience each time we are in transit, driving down a motorway, but also walking through an airport terminal, or strolling in a shopping centre. I would argue that flows and places should not be seen as two distinct and disconnected entities. If spaces of transit, such as motorways reflect, through their lack of singularity, the non-symbolised surfaces of the planet, and places stand as the symbolised ones, then we need to consider that both intermingle, and that places increasingly unfold as micro-spaces of flows. The motorway and its petrol stations demonstrate how flows and places mutually constitute each other. Places reconstruct themselves within them through appropriation or transgression. When the means of transport and communication and the flows they support emerge as a primary purpose underlying the existence of places, spaces of transit thus reveal that the systemic logic of flows translates itself into the proxemic scale of everyday life.

We have seen how the amount of control exercised over users finds its *raison d'être* in the dimension of risk and uncertainty intrinsically present in the logic of flows. The variable and unstable geometry of the space of flows, which has weakened the relative position of locales within the world economy, requires firms and cities to not only adopt flexible organisational structures, but also equip themselves with highly controlled areas. The control that defines the motorway means that the unstable logic of flows now infiltrates the realm of everyday life, and shapes public spaces according to its own recurring standards. It is not so much that global movements of goods and people materialise themselves and become all of a sudden visible through motorways, but rather that new categories of places arise. The recent proliferation of places of transit attests to our increasingly nomadic life-styles, providing us with a new global sense of place that questions both the actual design and the ostensibly stable and local meaning of public space.

2.2 THE URBANITY OF THE MOTORWAY

The motorway works simultaneously as a generic infrastructure that carries flows of signs, cars, goods and people, and as a public space sustaining a host of activities. It constructs itself as both a globally ramified network, and a territory which is locally inhabited. Thanks to this double status, its geographical entity defines itself as much from the outside, i.e. from the different places it connects, as from the inside, from the uninterrupted flow of cars it carries. The motorway, therefore, is more than a mere added accumulation of empty links. It acts like a dynamic exchange network between cities, attracting an ever-increasing population and hosting more and more activities. It induces new urban continuities that take the shape of long built corridors following the main axes of transit. The network appears then as a vast metropolis in motion, transcending both national and cultural borders. It expresses a new form of urbanity that does not unfold within, but in-between cities.

In the following chapter, my aim is to investigate the social and physical manifestations of this new urbanity. Why is it different from previous forms of urbanity? Should we say that it is an extension of a pre-existent urbanity hitherto attached to centres and peripheries, or should we say that the motorway creates an unprecedented form of urbanity?

To answer these questions, I propose to highlight various aspects of the motorway's urban character. I wish to show that the motorway not only acts as an urban mag-

net, but also creates a specific urban condition maintaining its own space, codes and rules. The perfect homogeneity of its sign system, manifest across national borders, is certainly the best illustration of this territorial unity. Furthermore, I aim to show that the standardised character of its petrol stations favours the emergence of new socialities. Their anonymous character permits activities and relations that would not occur in the over-coded space of city centres. It creates a paradoxical form of urbanity that recalls the intense and metropolitan atmosphere of large cities, without yet replicating their built density. To build this argument, I draw on a semantic analysis of the generic landscape of the motorway stemming from my photographic survey of European motorways. Through this analysis, I distinguish two forms of landscape: one that is constituted strictly of textual signs; and one that is composed of analogue signs resembling those found in cities. The urbanity of the motorway, I argue, constructs itself as a banal collision between these two landscapes. In the previous chapter, I have argued that the many signs displayed on motorways acted as a form of control. I shall now push this interpretation further, and show that behind the control exercised by the motorway's thick layer of signs lies an actual excess of freedom.

In the first part of this chapter, I evoke a series of emerging urban regions, whose development intrinsically relates to the large-scale vehicular mobility induced by the motorway. These regions take place in a European context marked by an intensification of exchanges between cities. They often involve transnational developments within which the motorway acts as a linear attractor capable of concentrating a vast series of commercial activities. Hence, in Europe motorways are more and more embedded in dense urban areas that tend to absorb them and turn them into peri-urban boulevards. In the second part, I focus on the motorway network itself, which I provisionally define as a closed and authoritarian system. Regarding the digital character of its landscape, the motorway appears as a very abstract and self-referenced language, cut off from its surrounding context. This view corroborates the exclusive character of Castells' space of flows, and asserts the idea that the motorway reproduces its implacable logic on a local scale. In the third part, I portray a second landscape, holding a much more urban character. This landscape defines the motorway as a public space hosting a variety of populations and activities. In the fourth part, I define the urbanity of the motorway as an interaction between these two landscapes. Although individuals and communities might feel alienated by the closed and authoritarian system of signs on motorways, they also find new freedoms stemming from the absence of traditional urban codes. Hence in America, highways are associated with freedom. The lack of usual urban codes, I argue, permits an emancipation of social behaviour. The uniform character of the motorway is thus transformed into

a quality. It makes space for social appropriation and improvisation, and surpasses the repetitive and functional distribution of petrol stations along the motorway. The last part suggests that the replacement of urban density by mobility participates in the creation of a new metropolis unfolding on a European scale. The urbanity of this new mobile metropolis is marked by a combination of risk and freedom, proper to large cities, but instead of crystallising in urban concentrations, it unfolds through movement and diffusion.

NEW URBAN REGIONS

In Europe, the motorway network contributes to the creation of different urban regions. In Germany, for instance, a new urban region is developing around the new economic triangle emerging between the cities of Berlin, Leipzig and Dresden. These three cities are linked by the A4 motorway, a major axis of transit that starts from the Benelux and runs through Germany, up to Poland and Russia. With the re-unification of Germany, political efforts have concentrated on the infrastructure connecting the East to the West. In Eastern Germany, the A4 has been enlarged to become a six lanes motorway, similar to those found across Western Europe. Its actual landscape gives evidence of the urbanisation of the region by making visible a vast peri-urban territory marked by the development of many new industries and large infrastructures. The Benelux, a region defined by the contiguity of three European countries – Belgium, the Netherlands and Luxembourg –, experiences a similar urban development. In order to benefit from advantageous tax policies, and easy access to networks of transportation, many professionals settle in residential fringes situated along the borders. This increasing transnational mobility tends to create a new urban region, marked by a dense motorway network (the densest in Europe) over unprecedented mileage of borders. In this capacity, the motorway network contributes to the formation of a region that responds to the increasing mobility of people among countries. Further East, a new urban region running along the E58 European motorway is also developing between Vienna and Bratislava. It takes the shape of a transnational corridor typified by the proliferation of random housing. These three different regions demonstrate that, in the particularly dense context of Europe, the motorway network has become a determining factor of urban development.

The emergence of these transnational regions relates in many ways to recent European developments. Today, Europe is constructed as a constellation of cities intensively linked by relations of concurrence and complementariness. In this new context, the motorway network acts both as a connector and an urban generator that favours the emergence of new urban forms paralleling the growth of existing cities. Tran-

snational regions often take the form of long urban corridors flanking important axes of transit. Overcoming the limits set by regional and national borders, they also challenge the concentric and self-centred growth of cities. If their form seems indifferent to the historical and central positions of cities, they remain nevertheless largely dependant on their distant interaction. They bring the peripheral and polycentric growth of cities to a new stage of development, characterised by a reversal of the traditional relation between centre and periphery. Concentric urban growth is thus replaced by linear urban developments that do not stem from the reinforcement of existing centres, but from the materialisation of transnational flows of people and investments between these centres. The consequence is that, seen from the motorway, crowded and hard-to-reach centres turn into peripheries. The motorway network becomes the expression of a new urban condition that does not take place within, but in-between cities – a city in motion developing on a European scale.

DIGITAL LANDSCAPE

Among the different video loops that compose *Statorama*, many reflect the very digital character of the motorway. They contain generic objects such as canopies, instruction boards, video cameras, screens, distributors, keyboard, and cash machines. Their purpose is to reveal the singularly textual and numerical character of the motorway's landscape. This digital landscape reflects the authoritarian and autonomous aspect of the motorway. French writer Michel Tournier describes the motorway as a closed and separate world with entrance and exit gateways. For him, the car is like an aeroplane which flies over an area and lands hundreds of kilometres further on (Tournier 1978, 269). Increasingly, it is made invisible behind a forest of noise barriers cutting off motorists from the surroundings. The motorway is thus superimposed over the land as an autonomous network. It does not lie in the landscape, it is suspended above it. It develops as an abstract and autonomous system, which poses its own rules, codes and eye-catching architecture. It constructs itself as a closed and hermetic network.

The prefix “auto” in the words *autoroute*, in French, or *autostrada*, in Italian, reflects the independent and self-referential character of the motorway. Auto-nomous, auto-normative, auto-cratic, auto-mobile, auto-matic... are some of the adjectives that define the closed and alienating aspect the motorway. Thus, as it cuts through borders, either regional, national, or cultural, the motorway abstracts itself from local meanings in order to perpetuate its own language. It draws, in turn, a thread of common and minimum sense, which all cultures can share and understand. The poor vocabulary of the motorway, the simplicity of its codes, and the abstraction of its

signs, are the means through which it manages to construct a world of its own, detached from the cities and places it was originally meant to connect. Viewed through its digital landscape, the motorway constructs itself as an alien system that abstracts people and signs from their local settings, and turns them into foreign and generic matter.

ANALOGUE LANDSCAPE

The digital landscape of the motorway hides yet a second landscape, which I would define, by contrast, as analogue. Among the video loops that compose the catalogue, many represent people, places, particular atmospheres and banal scenes of social life. Others picture objects, such as lights, trash cans, benches and souvenirs, each possessing a very urban character. This analogue landscape reflects the various activities taking place along the motorway; and if we take a closer look at the motorway, we see that social and commercial activities do not only occur at the margins of the motorway's perimeter, but also inside it. Its innumerable petrol stations, in particular, are the stage of a vast choreography, orchestrating millions of travellers and commuters, night and day. In her essay "The Biotope", Tracy Metz argues that the motorway is not only a link between places, but a place that is itself intrinsically attached to and emblematic of our nomadic life-styles:

[the highway] is different from other places in that it exists thanks to movement. (...) Increasingly, our lifestyles are attached to it. The highway generates new activities and meeting places: highway cafés, filling stations, shopping centres and business parks. The highway is not only a technical machine, it is also a biotope. We work there, we eat there, we shop there, we communicate there – even if it is with rude gestures, we find (or buy) love there. And sometimes we die there. (16)

Metz presents the motorway as having become a place where more and more social relations and events take place. Not only does it serve as a promoter of growth, and as magnet around which new urban developments can cluster; it also exists as a distinct urban territory, nurturing a variety of fresh activities. During the vocational summer rush, for instance, crowds of tourists shop and enjoy green areas, as if petrol stations were already part of their destination. At night, truckers park their trailers side by side and form temporary settlements attaining a density comparable to that of an urban district. Communities of migrants gather in car parks. On the edge of national borders, illicit drugs are trafficked along with gold and jewellery. In the Neth-

erlands, prostitutes receive their clients in camper-vans advertising their service on national motorway sex-lines. “In many car parks”, according to Metz, “cruising homosexuals have brief encounters. These meeting places are so well established that they have their own social rhythm: Monday evening, for example, is leather evening” (19). Petrol stations are thus the scene of every kind of human activity, sometimes visible and collective, sometimes obscure and illicit. The analogue landscape in which this takes place defines the motorway as a social space, which is singularly open and inclusive place, thereby contradicting the systematic and univocal character of its generic language.

THE CIVILITIES OF THE MOTORWAY

The urbanity of the motorway unfolds as a banal collision between these two antagonistic landscapes. We might construe this juxtaposition as being so contradictory that the parts would only neutralise one another. We might also view the digital landscape as nothing more than the signifying surface of the analogue landscape, its superficial and paradoxical expression. But these two landscapes are, in fact, complementary and intimately related to each other. The primary reason is that the main function of the digital landscape is to transmit a set of rules that ensure the taming and civilising of the motorway users. The German sociologist Norbert Elias (1973) explains that western society has always been shaped by norms of behaviour. These “civilities”, as he calls them, correspond to the various rules that condition and orientate the behaviour of individuals in society. In his book, “Über den Prozess der Zivilisation”, he relates them to the external conveniences of the body: attitudes, gestures, facial expressions, ways of eating, speaking, or watching. He explains notably that impulsive types of behaviour have been conditioned differently through the ages. In the Middle Ages, for instance, the psychological dispositions of society were more inclined to follow spontaneous impulses and instincts. Thus, emotivity was marked by much freer and extreme forms of behaviour. This didn’t mean that there was an absence of norms, but that the norms regulating and restricting affectivity were less constraining than they are today (Elias 470). Following Elias’ argument, we can say that motorway signs do not reflect particularly constraining codes. They indicate speeds and directions, but say nothing about social behaviours. Furthermore, their generic character provides a guarantee of anonymity that paradoxically encourages many illicit and marginal activities. It keeps the motorway relatively free from traditional social codes and the cultural pressure that is prevalent to city centres. It thereby creates a form of freedom that favours many socialities, which would be less likely to the over-coded space of cities. Although we have argued in the previous chapter that the dig-

ital character of the motorway expressed an intensified control of people, we now need to add the qualification that this control is not as pervasive as it seems, in that it also acts as a mask that favours the emancipation of social behaviours and the development of a greater array of social events.

The second reason why I believe the interaction between the digital and the analogue landscape of the motorway induces a certain form of urbanity is because many of the signs and objects of which they are composed belong originally to the urban realm. Motels, drive-ins, public phones, public furniture, cash machines and many other objects are thus familiar items that assume the status of exiles from the city, reincarnated to the standard and normalised world of the motorway. Besides, the standardised character of the motorway does not automatically correspond to a limited set of modules, all identical, and assembled slightly differently from place to place. It signifies, on the contrary, that the more the motorway standardises itself, the more its norms and modules mushroom, the more they become complex, open and compatible. We should not therefore view the standardisation of the motorway simply as a lack of urbanity, but as factor encouraging accessibility. Far from amputating the motorway from social and cultural relevance, it provides it with a particularly open and appropriable form of identity, which remains at once global and specific.

The generic component of petrol stations therefore is neither a fatal counterpart of the obligatory movement of the motorway, nor a residual and decadent form of urbanity. Rather, it constitutes, in my view, its very vitality. The anonymity of petrol stations allows many improvised and unexpected activities to unfold in total contradiction to the motorway's over-determined and perfectly univocal form. Generic activities, such as refuelling, eating, or resting, are constantly added to and perverted by new practices, either individual, or collective. Their standard character does not mean that they become interchangeable, equivalent, and emptied of social value. It promises, on the contrary, that they make space for a maximum degree of improvisation. The neutral and anonymous character of petrol stations excites an unexpected aptitude for appropriation, and provides them with a new social meaning, intimately attached to our increasingly nomadic and peri-urban lifestyles. Far from the over-centred, over-exposed, and over-codified urban spaces, far also, from the over-mediatised flagship projects meant to revitalise historical centres, petrol stations offer an alternative to traditional public spaces. The complexity of the relations that link commuters, travellers, truckers and motorway staff pervert a little more everyday their strict functions of transit. It expresses a new form of urbanity that transcends the repetitive and functional distribution of petrol stations along the motorway, and creates the condition for an expanded form of citizenship.

THE EUROPEAN METROPOLIS

The motorway, as we have outlined, constructs itself as a vast linear metropolis unfolding across the entire European continent. It creates a new urban form, which is devoid of centre, periphery and borders, a form which is both concentrated in the circumscribed space of petrol stations and spread across borders. This new metropolis addresses, in my view, actual reflections concerning Europe's future identity. With the recent European developments, in the political sphere, many questions have emerged concerning the eventual unity of Europe. Does this unity already exist, or is it to be an artificial imposed construction? Should it be based upon social, political, economical or cultural interests? Can we justify it on the basis of its common historical past and geographical boundaries? These questions are central to Stefano Boeri's programme of research, as developed in the book *Mutations*, relating to the exhibition of the same name, held in Bordeaux. In his programme "USE", Boeri (2000) undertakes an exploration of the European territory, based on a series of local cases and drawing on a network of 60 people, spread over 15 different countries. The purpose of Boeri's programme is to investigate the uncertain nature of Europe. For him, this uncertainty results from an excess of possible territories and an excess of geopolitical scenarios. He sees at least two existing paradigms of Europe. A first paradigm describes a dominant representation of a European community, representing Europe as a big fortress, an expanding political and economic organism, characterised by a very defined and well circumscribed territorial perimeter. A second paradigm is founded upon the observation of socio-economic phenomena, related to their specific geographical contexts. Contrary to the first political paradigm, this one defines Europe as a heterogeneous geographical entity, characterised by patches of local concentrations and energies, and fluctuating boundaries. In this scenario, Europe resembles a territory crossed and animated by multiple dynamics of development, creating a very differentiated area, with few nodal centres and less advanced peripheral spaces. This view is shared by a large number of sociologists and geographers, whose findings converge around a concurrence that opposes cities, and more particularly those which are the capitals of economic and financial power, namely Paris, London and Frankfurt. This vision of Europe tends to subdivide its landmass into large homogenous zones, such as the Blue Banana, the Sun-Belt, the Third Italy etc. It thus defines Europe as a reticular system articulating various urban densities, financial flows, and economic interdependences. Boeri proposes a third paradigm, which he intends to be less systematic than the two previous ones. He explains that in order to seize the distinctive traits of the new spatiality of Europe, one has to determine a principle of variations on a theme, a number of phrases that are recurrent through different regions: a fundamental syntax, a code that is symbolic and recog-

nisable. According to his new paradigm, the identity of Europe can only be understood through the modalities of mutation of its territory. It relies neither on a synoptic vision, global and attentive to political perimeters, nor on the circumscription of homogenous regions. Instead, it raises the idea that Europe is a global and coherent system made of multiple local mutations of space.

The interesting aspect of Boeri's programme is that it relates the unity of Europe to its urban identity. I would say that, although it does not form part of Boeri's research programme, the European network of petrol stations substantiates his paradigm, providing it with a model that helps envisage a new global European identity. It posits a new spatial code that is based on local mutations and idiosyncrasies. It offers the foundation for a vision of Europe that reinvents itself around a series of local patterns repeating themselves from place to place, and raises the possibility of a new urban form that works simultaneously as a transnational network and as a local device. It ultimately projects a diffused urban condition, which we can only perceive from a multitude of micro-locations.

In this chapter we have shown how the motorway network is a primary factor of urban development. In dense urban areas, such as Randstad in the Netherlands, motorways act as a series of urban generators. They no longer hover freely above the landscape. They are increasingly embedded in urban areas where they coalesce with lots of essential activities: business parks, rows of furniture shops, hypermarkets, allotments, residential areas... The urbanity of the motorway is not yet restricted to its margins. It also develops through a vast public space where an increasing amount of people live, work, and accomplish all sort of activities. Its network of petrol stations, in particular, has seen induces a number of discrete and informal places spring up, stimulating unplanned relationships. The anonymous character of petrol stations invites many marginal and sometimes illicit activities, which would be less likely to take place in the over-exposed space of city centres. These activities remain discrete. They do not seek to take root, nor do they have the ambition to reshape the materiality of the motorway to their own image. Instead, they cultivate a marginal position that takes advantage of a space that is liberated from traditional urban codes and from the usual icons of urban life, such as suburban houses, office buildings, or leisure centres. Although the motorway may sometimes appear as an autonomous system of transit, detached from local and urban realities, we need to adjust that view and admit that it unfolds, today, as a networked metropolis made of multiple locations.

This investigation of the European network of motorways comes three decades after Robert Venturi described a form of urbanity that was intrinsically related to a strip of motorway. His prophetic study of Las Vegas shed new light on an emerging ur-

ban form that was undissociable from vehicular mobility. Looking at the European motorways, we can see how Venturi's Las Vegas has today expanded from the urban to the global, and how our dense European network has developed as one of its innumerable ramifications. It has yet created an urban condition that is so vast and so globally diffused that we can no longer define it through a few types of building. To grasp its complexity, we can at best define it as series of layers of landscapes, networks, and places that are deeply intertwined with one another. The urban character of the motorway holds, therefore, a rather ambivalent relation to the urbanity of cities. The motorway borrows a number of signs and objects from the city, and sometimes acquires a metropolitan atmosphere stemming from a mixed feeling of risk and freedom. It yet never reproduces the city's density, nor the kind of stable social relations that link friends and neighbours. This paradoxical form of urbanity implies, in my view, a redefinition of the relation between cities and infrastructures. Not only do they mutually define each other, they also act as communicating vessels, exchanging and substituting their generic and urban components. Thus, when cities tend to locally absorb and fix the flows carried by the motorway, their signs, places, and objects migrate and restore themselves in the inhabited space of the motorway. The motorway, therefore, constructs itself as an on-going, interactive transfer of activities from cities to networks, thus confirming that the question is not how cities absorb infrastructures anymore, but how infrastructures absorb cities.

2.3 CROWD PHENOMENA

Andreas Gursky's photographs provide a striking illustration of the many kinds of crowds that constitute our contemporary and transitory landscape. His large format photographic depicts many scenes of people enjoying their leisure, in swimming pools, watching planes at the airport on Sunday mornings, celebrating Mayday, attending concerts or such like. In each picture, the objective, or the occasion which has assembled the crowd, remains unclear, or secondary. The real event is always the crowd itself. Each image consists of a large group of objects or people which together form an abstract and fascinating mass. Gursky often restricts his photographs to a fragment of the crowd, letting it cover the entire surface of the frame. His subject is thus continuous, without beginning or end. We are given to imagine a vast collective movement of matter that behaves as a coherent whole, a whole forever beyond our perception. This practice results in extremely dense and full compositions that resemble American Expressionist all-overs paintings of the 1950s–1960s – the colourful cables of a factory in Karlsruhe intermingling like the lines of a Pollock painting, or the square pattern of a drop-ceiling repeating itself like in a piece of minimal art.

Gursky's photographs represent particular instants where the human condition, manifest in the crowd, becomes entirely determined by its environment. His photographs can be read as abstract images built out of fragments of a banal reality. In a similar vein, when he shows fragments of parliaments, banks, factories or office buildings, he

evokes a population totally de-individualised. Is it the individual personality displaced by collective identity in order to privilege the crowd over the person? Is this a version of the proverbial anonymous “cog in the wheel”? We could thus interpret Gursky’s work as a primary critic of mass phenomena. Yet, the multiplicity of his subjects resists simplistic judgements regarding mass production or mass consumerism. His work appears to be a state of society where the crowd becomes a condition overcoming the event it is resulting from, and forgetting indeed why it has actually emerged. Gursky’s crowds thus gather without a goal. They exist as a spatial condition of their own.

Situations such as being stuck in a traffic jam, or in a queue in an airport terminal have become common place in our daily experience of travel. Crowd phenomena have become an intrinsic aspect of our nomadic lifestyles. They correspond to specific instances where multiple individuals fuse into a new composite unity, and develop behavioural traits resulting from the different conflicts and alliances that occur between its individual components. The hypothesis, here, is that the different crowds we encounter on the motorway and elsewhere provide another edifying example of how flows participate of our mundane experiences of places.

Because of its perpetual desire for expansion and incorporation, the behaviour of the crowd is continually, dynamically and turbulently transforming from dispersion and disappearance to coherence, concentration and stability. Hence the coherent multiplicity of the crowd, the way it works as a whole and unique organism, in spite of the multitude of elements it is made of, is certainly the most fascinating question it raises. Departing from this question, I propose to investigate the motorway’s multiple, yet coherent character. The busy motorway, just like a crowd, is made up of a multitude of cars, people and localities that have nothing in common apart from their connection to its global network. Do all these places and actors, spread over vast distances, form a unique and coherent whole? Is it enough to be connected through a communication or transportation network? Does not it also require a common goal, a common purpose that can pull everybody in the same direction? What justifies, or explains the unity of the motorway, its behaviour both collective and coherent? Can we consider the motorway as a vast crowd of people, signs, and objects?

My objective, in this chapter, is to define the motorway as a soft infrastructure, that is not just a physical road system, but also a social space inhabited and created by a fluid and uncontrollable crowd of people. Although the motorway supports many kinds of flows, such as flows of signs, goods, and vehicles, we need to admit that it is its flow of people that defines its social and human capital. But it is also the most difficult flow to grasp, for we know that it is composed of very diverse users and opens itself to various forms of social appropriation. Drawing on the motorway’s composite flow of people, and the way it turns large numbers of individuals into a coherent

crowds, I propose to define the motorway as a collective and human phenomenon, questioning the permanent and univocal aspect of its built infrastructure, while raising new forms of social proximities and collectives.

The first part of this chapter focuses on traffic jams. Traffic jams, I argue, should not be seen as temporary failures of the motorway system, but as relevant social events. The second part evokes the spontaneous crowds that regularly occur in the car parks of petrol stations. These crowds illustrate Elias Canetti's description of the "quick crowd", for they appear as quickly and spontaneously as they disappear. Such quick crowds give an interesting view of the particularly brief and tenuous forms of intensity which the motorway gives rise to. The third part of this chapter concentrates on the reflexivity of mobile subjects consequent to their more and more frequent experience of long-distance travel. Following Lash and Urry's study of the mobility of people, I show how the accelerated and ever-widening trajectories of flows causes people to gain a capacity to deal with the many places they choose to visit or not, and the many signs they are bombarded with in their travels. The fourth part points out the differences that animate the motorway's seemingly fluid and coherent flow of people. The experience of mobility is a lot more than a question of speed or transport technology. It also involves a series of human behaviours, which can be very different according to the people who are in movement. Being a tourist, a commuter, or a clandestine immigrant, thus involves a totally different experience of mobility. In the fifth part, I describe the main attributes of the crowd: the wish to grow, to become denser, to maintain equality between its constituents, and to follow a common direction. These attributes substantiate, in my view, the motorway's crowd character. In the sixth part, I argue that these different attributes help conceive of a modern form of the crowd, partly represented by the motorway. I redefine the motorway as distant and disembodied crowd, a crowd which is both temporary and omnipresent, and remains latent as long as no particular event renders its statistical flow visible. Such an event is a traffic jam, for it is only when we get stuck in one or in a busy car park, when the distance between cars is reduced to almost nothing, that the motorway's anonymous community becomes apprehensible. The crowd we encounter on the motorway, I argue, comes as a temporary manifestation of its global and relentless flow. It comes as an actualisation of a virtual crowd of cars which is omnipresent in its global network, but remains invisible as long as the traffic is fluid.

TRAFFIC JAMS: THE MOTORISED CROWD

When a traffic jam occurs, the fluid and seemingly infinite flow of the motorway suddenly crystallises into a stagnant, pathetic pack of cars. The traffic jam may then appear

as just a dysfunctional break, a temporary failure of the system. But seen in another way, it also creates a social event, projecting the image of a motorised crowd. This crowd, like any crowd, prompts a particular form of interaction, an instant of which Tracy Metz (1992) illustrates when she relates the story of a romantic, unrequited, encounter between two motorists stuck in a traffic jam on a Dutch lane:

They overtook each other twice, three, four, five times, Jacqueline in her light blue Toyota Corolla and the man in his Opel. "Each time we looked at each other, smiling... yes we had a kind of contact", she says. (...) We were approaching the filling station near Hoofddorp and he slowed down as if to say, shall we turn off here? Then I began to have doubts and I thought: too risky, I shan't do it. We continued driving, he turned off at Badhoevedorp, we waved and that was that. (15)

Metz explains that in the same period an Utrecht company named ECD (Eye Contact Dating) saw the potential of traffic dating and developed a link system allowing car drivers to meet each other. Those who registered with the dating agency were given a car sticker with the text "If you like me, call ECD for a date with me." The idea was that the company would pass on the telephone number of the interested person.

In addition to falling in love, there are of course many other activities that take place in traffic jams: talking, singing, smoking, eating, drinking, thinking, shaving, listening to the radio. Some people also make notes on a notepad fixed to the dashboard, dictate letters into a tape recorder, telephone or send a fax. Many motorists apply make-up or read the newspaper; some also keep a book in their car for such moments. Metz explains that many motorists do not actually dislike traffic jams. They do not perceive the time spent in their car as wasted. Their car becomes a third residence, and traffic jams a quotidian refuge between home and work. In one of their research work, Buro Schie (1997) also argue that traffic jams bear a particular social relevance in the Dutch context:

Dutch people spend more time sitting in traffic jams than in church; indeed, being caught in a tailback is gradually becoming a symbol of unwinding and social relevance. Groups who are never caught in a traffic jam – students, the unemployed, pensioners and prisoners – are regarded as have-nots, a category no one wants to belong to. The tailback phenomenon (...) is a place where people come together, a postmodern equivalent of the town square. In the 21st century the social promenade will take place on the A16.

Even now the Brienenoord tailback has something of the quality of a local pub where the same people meet one another everyday. (88)

As they occur in dense urban areas, traffic jams also become an integrated part of a city's quotidian activity. In a research work carried out in Harvard University, Rem Koolhaas (2001) and his students describe the city of Lagos as an extreme case of urban congestion, within which traffic jams come as an illustration of the city's capacity to behave as a self-organised entity. The research shows that Lagos' traffic jams represent a lot more than a simple failure in the planning of its road infrastructure. They reflect the transformation of the city's road system into a determinant site of negotiation, an urban condition largely accepted and appropriated by local populations and surrounding communes. Koolhaas and his students distinguish two types of traffic jams: the "no-go" and the "go-slow" (685). The no-go is more a place than a situation. The go-slow, by contrast, designates an omnipresent condition, constrained by the width of the road, creating a space that is entirely negotiable, usually illegal, but always productive. In the congested and self-organised condition of Lagos, it does not constitute a problem that needs to be solved, nor a situation to be rationalised. As the traffic jam grows and becomes omnipresent in the city, the flow of cars pours over into surrounding zones and widens the space originally reserved for the cars. For the surrounding communes, this situation represents a threat; but it also offers a new set of opportunities. By encouraging deviations, traffic jams redirect the users of infrastructures towards zones that are often badly distributed. Sometimes youth deliberately destroy the roads in order to redirect traffic towards a commercial district lacking clientele. The traffic jam becomes then a self-organised flow governed by an implicit agreement between those who provoke the bottleneck jam and the vendors who use it as a chance to sell their products. It does not therefore necessarily represent a failure of the rational infrastructure planned to connect a point of departure to a point of arrival, but exists as a new condition, constantly modified by the myriad local events of the road.

BUSY CAR PARKS: THE QUICK CROWD

The busy car parks of petrol stations give rise to another kind of crowd. Car parks usually look empty and over-sized. They take the shape of vacant spaces that look sadly abandoned and derelict. Their conception thus anticipates a maximum state of occupation that only occurs at specific times, i.e. during the yearly holiday rush, or at night, when truckers park their trailers side by side in rows. Besides these peaks of intensity, there are also, at times, inexplicable moments of calm. Spaces may remain

empty for a couple of hours; then within a few minutes, they are filled by a crowd of Danish football supporters, a fleet of buses transporting German tourists, a group of bikers, and families stopping for lunch. They are suddenly transformed into the busiest of places, and we then wonder why they have not been designed bigger. This instantaneous transformation of the car park highlights a type of crowd, which is specific to the motorway. According to Canetti's (1976) classification, this crowd can be defined as both quick and open. Quick because it appears as fast as it disappears, and open because it is not constrained by boundaries. The open crowd is basically a crowd whose number of participants is not limited, and is not contained in a limited space. The crowd that regularly inhabits car parks is thus an extremely spontaneous sort that has, by nature, no growth limit. As soon as it exists at all, it wants to consist of more. For its continual growth is the very condition of its existence. When it ceases growing it simply disintegrates:

The open crowd exists so long as it grows; it disintegrates as soon as it stops growing. For just as suddenly as it originates, the crowd disintegrates. In its spontaneous form it is a sensitive thing. The openness which enables it to grow is, at the same time, its danger. A foreboding of threatening disintegration is always alive in the crowd. It seeks, through rapid increase, to avoid this for as long as it can; it absorbs everyone, and, because it does, must ultimately fall to pieces. (Canetti, 17)

The crowd typical of car parks also favours an emancipation of social behaviour, an emancipation which we have already defined as proper to the urbanity of motorways. As people leave their vehicles, they exercise, run around, play football, shout, vomit... They adopt an attitude which may relate to the feeling natural to being in a crowd. Thus, according to Canetti, the crowd is a place of freedom, the only place where people are freed of their fear of being touched by others. The normal repugnance of being touched, he says, remains with us when we are among people, in a busy street, in restaurants, trains, or buses. But when we find ourselves in a dense crowd, in which body is pressed to body, this fear changes into its opposite.

When the crowd is compact enough, so that we do not notice anymore who it is that presses against us, we tend to surrender ourselves to the crowd, and we cease to fear its touch (...). The individual feels that he is transcending the limits of his own person. He has a sense of relief, for the distances are removed which used to throw him back on himself and shut him in. With the lifting of these burdens of distance he feels free. (21)

The physical attributes of the motorway, such as its lack of built density, or the required distance between cars in fluid traffic – seem to indicate that everything on the motorway is designed to avoid the occurrence of crowds. Yet, when a crowd forms, it often gives rise to a feeling of excitement and euphoria. Although usually short-lived and unexpected, such moments are the cause of spontaneous affability, which might make it an exhilarating social experience.

MOBILE SUBJECTS

The frequent occurrence of crowds defines the motorway as a collective and socially constructed flow of people. It directs our attention towards motorway travel as collective experience, as well as people's increasing capacity to assimilate the realities of mass transit. Mass transit has thus become an essential feature of our contemporary landscape. We can even say that it has created a landscape of its own, one which Arjun Appadurai (1993) labels as "ethnoscape". In his definition, the ethnoscape owes less to the extensive infrastructure of transportation that supports it than to the plural and nomadic lifestyles it conveys. Likewise, Lash and Urry (1994) explain that the experience of mobility has become more than just a question of new transportation technologies and greater speed, but also a whole social organisation, giving rise to the production of new forms of subjectivity:

Rapid forms of mobility have radical effects on how people actually experience the modern world, and the very production of subjectivity. These effects include the way that landscapes and townscape have come to be typically viewed as through a frame; that landscape consists of a series of swiftly passing panoramas; that nature can and should be subdued, or flattened or even bypassed; that new public areas should develop, such as railway stations, airports and so on, where novel norms of social life apply; that mobility has to be socially organised and involves various forms of surveillance and regulation (especially true with car travel); that new forms of social distance have to be learnt within the confined contexts of mobility... (255)

Lash and Urry show here how the actual combination of mass travel and long-distance mobility has brought about some striking changes in our experience of mobility. The most significant of these changes is probably the more and more reflexive attitude of groups and individuals when confronted with the artificial remaking of landscapes and places. Mobile subjects thus gain a reflexive distance to the places they go through, and the myriad signs they encounter. This reflexivity enables them

to comprehend and adapt to the growing complexity and the fast changing trends that shape the “synthetic environments” they move through.

The mobile subjects who corroborate most explicitly the concept of reflexivity are undoubtedly the so-called “post-tourists”. Through their extensive experience of travel, post-tourists have become self-conscious and role-distanced. They know that they will have “to queue time and time again, that there will be difficulties for foreign exchange, that the glossy brochure is a piece of pop culture, that the apparently authentic local entertainment is as socially contrived as the ethnic bar...” (276). According to Lash and Urry, tourism becomes a sort of individual and reflexive mobility, both cognitive and aesthetic. It is no longer mass tourism, as we used to understand it. It involves a rising number of free and independent travellers who become “increasingly skilled at evaluating landscapes and townscapes, at building up their cultural capital so as to be able to form sophisticated aesthetic and environmental judgements” (58). Moreover, post-tourists have learnt to individually monitor their actions through systems and organisations which are themselves reflexive. These organisations, namely air companies or tour operators, involve the professional experts who have devised systems of transport, such as airline companies or tour operators, but also the “manufactured diversity” that seasoned travellers inevitably encounter on their trips. Thus, travellers have become more and more skilled at interpreting intense flows of images, “doing semiotic work”, their flow becoming more reactive and reflexive with regard to the technical systems and organisations through which it circulates. Increasing mobility does not mean therefore that people and places become alienated, and reduced to abstract commodities. It means on the contrary that groups and individuals are more and more at ease with the realities of having to move, or the fantasies of wanting to move.

MOBILITY AS SOCIAL CAPITAL

The crowd character of the motorway, encompassing the increased capacity of individuals to deal with the specifics of mass travel, should not hide the fact that although people use the very same global infrastructure, they travel for very different reasons, and under very different conditions. For John Urry (2002), the mobility of people is an important component of social capital. The experience of mobility takes multiple forms depending on the kinds of subjects that compose the flow. Professionals, immigrants, and tourists experience mobility and construct their subjectivity in totally different ways. While some people migrate clandestinely, others circulate in select networks of airport lounges, five-star hotels and conference centres. This latter managerial elite is certainly the most footloose sort of mobile subject:

They circulate at greater distances back and forth on holiday and internationally at work. Here they perform the sort of advanced services which can be separated from the means of service production, such as consulting, finalising a merger, checking out a recently acquired foreign subsidiary, giving papers at international conferences and so on... (Lash and Urry, 29).

In contrast, immigrants constitute a category of mobile subject that often perform the low value-added services that the professional upper class consumes. Their mobility differs from that of the professionals in the sense that they do not actually circulate, but move, and tend, with the occasional trips back to their country, to stay. Moreover, the mobility of one group of people can contribute to the degradation of the social capital of others. The opening of a motorway between two cities or two regions, for example, can damage the social capital of a community living between these two points. Moreover, for a group of people to travel, it is indispensable that another group of people stays fixed in its place of work. This is particularly true in the case of air travel: the mobility of an executive implies the existence of a sedentary staff to ensure the booking of tickets, the management of appointments by fax or telephone. John Urry (2002) indicates, for instance, that O'Hare in Chicago, the world's largest airport, employs more than 50,000 people.

THE ATTRIBUTES OF THE CROWD

If Lash and Urry's survey of mass travel encompasses a variety of mobile experiences through which people construct their own forms of reflexivity, it remains centred on individual forms of experience. How then should we relate the reflexive behaviour of individual travellers to collective forms of travel, such as those we experience in traffic jams and busy car parks? Can crowds be considered reflexive too? Canetti explains that for a group of people to become a crowd, to behave as a single body and as a coherent and continuous whole, it needs to integrate four main features, without which it would not be a crowd. The first of them is the tendency of the crowd to grow and expand. "The crowd always wants to grow", says Canetti (32). It wants to propagate itself and become larger. Canetti illustrates this tendency through the example of a dancing crowd, which becomes stronger as it integrates more and more dancers. Even if the dancing crowd is in a small space, and only has a limited capacity to grow, it tends to simulate its growth, through other means. This happens in clubs where the growth of a dancing crowd occurs in a specific state of communal excitement, emphasised by the rhythmic and throbbing movements of the dancers. The rhythm of the steps, says Canetti, is repeated and multiplied, so that the steps of

each dancer is added to the steps of the others in a quick succession that conjures up a larger number of dancers than there actually are (35). Thus, even though the crowd of dancers does not actually grow, it finds ways to simulate its own growth. The second feature of the crowd is a state of absolute equality: "Within the crowd there is equality, a head is a head, an arm is an arm, and difference between individual heads and arms are irrelevant" (32). Thus, Canetti explains that it is determinant in a crowd that everybody does the same thing. The dancers that he uses as an example all swing their heads to and fro and shake their hands together. Their coordinated movements illustrate a kind of levelling, which all members of the crowd are subject to. The third attribute of the crowd is the movement that leads all its members towards the same goal. Canetti explains that crowds need a direction that is common to everybody in the given crowd. This direction constitutes a goal that is outside of the crowd, and strengthens its feeling of equality. The remoteness of its goal is thus essential to its continuing existence; its disappearance would be fatal. The crowd exists as long as it has not yet attained this goal, and once it reaches it, or loses it, it disintegrates. The fourth and last attribute of the crowd lies in its obvious love of density. These four attributes – growth, equality, common goal and density – define all together what we can now define as a crowd phenomenon, a portion of space constituted by a large number of people or aggregates animated by coherent and dynamic behaviour.

THE CROWD CHARACTER OF THE MOTORWAY

Can we now, from these four attributes, define the motorway as a crowd phenomenon? The motorway network, I believe, conforms in many ways to Canetti's crowds. For instance, the tendency of the motorway network to expand through innumerable ramifications reflects the inflationary character of the crowd. Canetti explains that inflation is a crowd phenomenon in the strictest sense of the term. The larger the crowd becomes, the smaller becomes the worth of each unit. The process of inflation that governs the obligatory growth of the crowd tends, therefore, to negate the identification of individuals with their marks, as they change from one moment to the other. The same process applies to the motorway. As Lash and Urry point out, images and goods exchanged on a global scale are emptied of meaning, and their individual value decreased in favour of the collective flow they inevitably form in their reciprocal movement. In the same fashion, places distributed along the motorway lose part of their autonomy and accept the possibility of being stripped of their former importance and reduced to an elementary piece of a global game, over which they have almost no control.

Furthermore, motorways comply to the tendency of crowds to break-up the boundaries that have been artificially created to circumscribe movements of people. But whereas an angry crowd smashes the doors and windows of houses in order to transcend boundaries, the motorway flows cut across borders by means of agreements. The equality existing among different members of a crowd can also be conceived of as a feature particular to motorways, as each locality that is globally connected to the network has an equal potential for evolving and benefiting from its traffic. Hence, the places that are distributed along its network have virtually equal chance to attract or repel global flows. When the motorway's logic seems to increase inequalities between major and secondary cities, it is always a differentiation that occurs between those who belong to its network, and those who remain outside of it. Thus, we can say that, like a crowd, the motorway creates a certain equivalence among the places that are situated within the reach of its network, an equivalence that is concomitant with its extensive standardisation. Density is another attribute of the motorway, since it is the intensity of exchanges between cities and regions – their density in time – that turns its global flow into space. Also, if the motorway exists as a socially relevant place, it is only because it reaches, at times, peaks of activity, relative to the density of its traffic. The last analogous feature of the crowd, namely the common goal that animates its every member, translates in the motorway logic in the destination propelling each car in the same direction. Once motorists have reached their destination, they leave the motorway and participate in their dissolution as crowd. Regarding this analogy between the crowd and the motorway, I would say that each attribute of the crowd can, to greater or lesser degree, be found in the motorway network.

THE MODERN CROWD

It remains to say that the motorised crowd of the motorway constitutes a very paradoxical form of crowd, one which, in my view, relates to the atomisation of contemporary lifestyles. The density of the motorway, for instance, is different from the form of density one associates with a crowd. Whereas the density of usual crowds relies on the physical contact of bodies, the density of the motorway lies on simultaneity and distant interaction. The motorway nurtures a kind of crowd that is mainly dispersed and motorised, and does not require physical contact to grow and gain density. It is a crowd of disjointed people and places, a crowd that remains latent, until such a time as the congestion due to a traffic jam freezes into visibility. The motorway does not unify its individual components through shared interests, but through a statistical and generic identity that owes more to databanks,

standard lifestyles and commercial interests, than physical intimacy. Its unity is thus strictly abstract.

Furthermore, the crowd character of the motorway does not solely rely on the potential occurrence of traffic jams and crowds of tourists. The flow of the motorway encompasses a shared amount of signs and objects, which together participate in making the motorway behave as a multiple and coherent whole. To illustrate the coherent multiplicity of the crowd, Canetti does not actually use the example of a human crowd. He takes instead the example of the sea, a phenomenon not animated by people, but which, according to him, behaves like a human crowd:

The sea is multiple, it moves, and it is dense and cohesive. Its multiplicity lies in its waves; they constitute it. The sameness of their movement does not preclude difference of size. The wind coming from the outside then determines their motion; they beat in this and that direction in accordance with its command. The dense coherence of the waves is something which men in a crowd know well. It entails a yielding to others as through they were oneself, as though there were no strict division between oneself and them. (93)

What Canetti elucidates here is that crowd phenomena are not necessarily composed of people walking in a street; they might equally be made of money, symbols or drops of water. Hence, if the sea expresses the coherent unity of the crowd, so can the flow of motorways. All are embracing and cannot be filled. Streams of signs and people flow into it, without ever increasing it. Like the sea, motorway flows constitute a universal matter, which touches all lands and regions, according in turn the possibility of reaching them. They do not act as a simple recipient that can be filled or emptied, but as a full space that increases or decreases temporarily, both in terms of size and intensity. Moreover, everything in the space of the motorway is serial. Everything repeats itself and comes in great numbers. Every single sign or object that partakes in the standard motorway vocabulary belongs to a vast series of similar items. There is no such thing as a unique service area. As these series distribute themselves along the motorway network, they tend to form singular kinds of crowds. The motorway flow appears then as the result of many intersecting crowds.

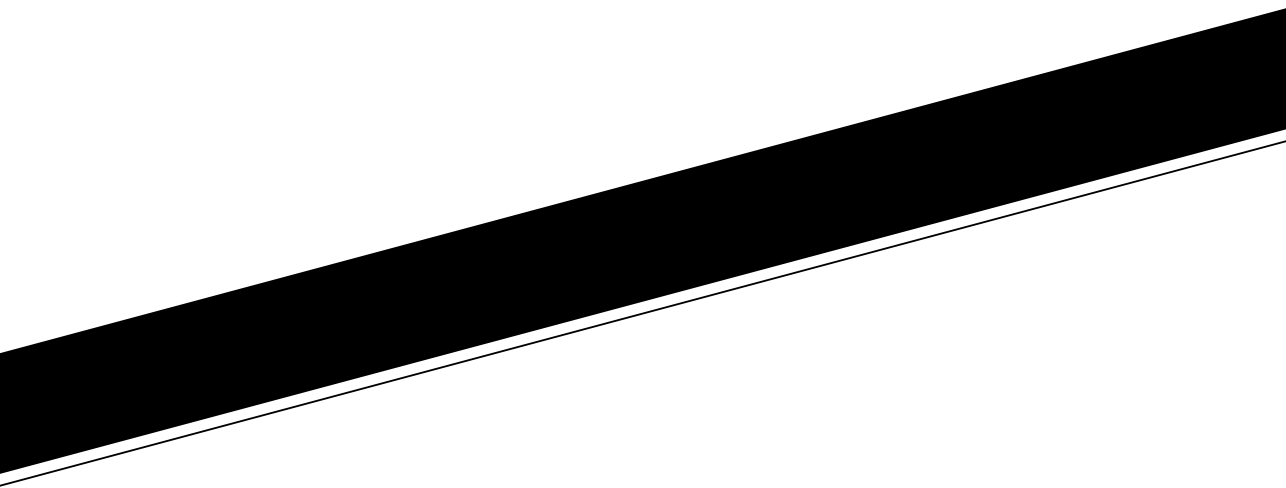
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In this chapter, I have developed a view of the motorway focusing on its vast and differentiated flow of people. Flows of people differ from flows of money, signs, or goods, in the sense that they possess an internal psychology and behaviour. They react to their environment; they have memory and feelings. Of course, their trajectories are

also influenced by the co-presence of cheap and expensive markets, and they are definitively attracted to economic centres, such as large metropolises. But the behaviour of the many individuals is also determined by a capacity to react to the vicissitudes and the various conditions of their own movement. This capacity translates as the reflexive behaviour of travellers, increasingly skilled at evaluating the multiple signs and images they are bombarded with during their trips, and negotiating the complex organisation of the various systems of transit they use in order to travel. Because of these qualities, human flows cannot be considered as one generic and uniform flow. Professionals and migrants, for instance, travel for very different purposes. For each of them, travelling is a particular experience, from which each constructs a distinct subjectivity.

Crowd phenomena, as Canetti describes them, highlight the psychological aspect of the human flow that unfolds on the motorway. Here, I think for instance of the frightening feeling one might have when trapped in a large and uncontrollable space, the limits and erratic movements of which he/she knows nothing. When we are part of a crowd, it is almost impossible to know how many people it is composed of and what its behaviour is going to be. The feeling is that of belonging to a vast flow of individuals whose personal fate is intrinsically linked to the collective movement that ties them together. This feeling is one of risk and promiscuity. It is a feeling of moving constantly from one crowd to another, as if there was no way to escape from the mass of people that moves at the same time as we do. The crowds we encounter in spaces of transit, such as motorways, can thus be said to have a real mode of behaviour, a very specific way of reacting, of transforming, of integrating new people and, at some point, disintegrating.

We have also seen that Canetti's crowd phenomena and the motorway itself converge around a number of attributes. They oppose each other, nevertheless, on the kind of proximity between the individual components. Usual crowds are made of people acting and reacting in a context of physical contiguity, and sometimes promiscuity. The motorway, on the contrary, is made of series of signs and cars who do not necessarily meet. Hence, the motorway constitutes a distant and paradoxical kind of crowd, within which proximity is mediated by a global infrastructure, owing more to the kind of complicity that unites a global community of cat lovers, for instance, than the usual kind of proximity found among friends and neighbours. This comparison between crowds and motorways forces us to reconsider the notion of proximity as a notion relative to scale and to the kind of mediation existing between people or places. Thus, if cities seem to be situated far away from each other on a geographical scale, their interconnection through means of transport and communication brings them today into an unprecedented condition of proximity.





PART

STANDARDISATION AND DIFFERENCE

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3.0 LANDSCAPES OF STANDARDISATION

This third section concentrates on the process of standardisation, which, I argue, constitutes a central mechanism in the articulation between the global logic of flows and the physical spaces that we inhabit. Since more and more norms are now imposed and debated around issues such as the security of buildings or the protection of the environment, urban space becomes a primary object of standardisation. The consequence of this standardisation is yet more complex than it seems at first sight, for the process of standardisation can actually create both sameness and difference. As they involve countless debates between actors and start to infuse the tools of planning and design, standards, I argue, bear new creative potential. They allow for innumerable combinations and their meaning shifts from being a repetitive and deterministic “practice of modules”, to being a “creative modulation”.

The relentless flow of canopies, billboards and reflection lines that characterises the motorway reflects a deep-seated process of standardisation that shapes many of contemporary urban environments. It stigmatises a process of systematic repetition that causes the inexorable reproduction of similar places and objects on a global scale. But isn't there more to standardisation than the strict reproduction of similar signs? Do norms, prefabricated objects, and logos all stem from the same global phenomenon? Can they reveal the different meanings attached to the process of standardisation?

In a general context, standardisation is associated with the ongoing homogenisation of spaces and life-styles stemming from global developments. It is often perceived as a negative consequence of the logic of flows responding to the increasing dominance of global networks, and entailing a dramatic erosion of local cultures. The deregulation of economies and the rising power of multinational companies thus imply the uniformisation of languages, spaces, and cultures. Brand names, stores, galleries and merchandising areas take over all cityscapes. In Paris, London and Singapore, the same consumer signs arouse the same desires and demands. In the previous section, we have yet seen that despite these critical associations, standardisation could also be regarded as a key process in the articulation between the abstract sphere of global flows and the concrete expression of space. We have notably seen that the generic and anonymous character of space could encourage social appropriation, and that the self-similar repetition of signs and spaces provided travellers with new cognitive assurances and a homey feeling, which Doreen Massey related to new a global sense of place.

In the following chapter, I propose to elaborate on the specific role of standardisation in the fabrication of our contemporary built environments, and raise the multiple aspects of its influence. If we take a closer look at the motorway and its many petrol stations, we see that they contain very different kinds of standards, themselves conveying distinct and discernible meanings. Some standards are technical; they consist of prefabricated modules used for the construction of buildings, or canopies. Some are commercial; they consist of signs that serve to show the omnipresence of a brand, or a company. Some have a legal nature; they consist of norms of security, or comfort. Drawing on these various forms of standards, I wish to show that many signs and objects displayed along the motorway are in fact the result of an incredible amount of rules and codes that often remain invisible. The interesting thing about these norms lies in their political nature, and their capacity to operate a transition between the global logic of flows and the physical spaces we inhabit. They often result from complex processes of negotiation, involving politicians, experts from different countries, as well as local communities, who debate around the questions concerning the adaptation of old standards and the production of new ones. British sociologist Anthony Giddens defines these institutional networks of specialists as “expert systems”. Following Giddens’ account on expert systems, I propose to define the process of standardisation as a vast and complex mechanism of negotiation, which influence on built environments goes way beyond the mere repetition of signs and logos. I argue that the deep-seated standardisation of space, marked by the influence of various systems of expertise, is the process through which global operations tend to solidify into urban forms. I thus try to show how standards primari-

ly produced to allow economic flows to cut across borders, allow the global logic of flows to transform into local and urban topographies.

In the first part, I explain why the circulation of flows on a global scale necessitates an increasing normalisation of the networks they move through, and why, therefore, the process of standardisation is a decisive aspect of the recent intensification of flows on a global scale. Drawing on an article of Saskia Sassen where she explains how new standards are produced in order to encase global operations in the local, I argue that the production of norms and standards is intimately related to the increasing circulation of people, images and money through global networks. These new standards, which she defines as “legalities”, are similar to a standard vocabulary composed of legal forms. They provide social actors with a common and uniform language, and allows them to debate and negotiate across border, even though they have very different cultural backgrounds. According to her, this new set of international standards has, in turn, meant a certain standardised built environment, observable in the “hyperspace of international business”. In the second part, I take the motorway and its many service areas as a site of investigation, illustrating the different forms of standards that shape our contemporary landscapes. I argue that there are at least three forms of standards. The first one finds its origins in the early development of petrol stations in America, which have been marked by industrial modes of prefabrication. The second refers to the repetition of signs, such as billboards and canopies, which govern the visual continuity of the motorway. We will see that the similarity between petrol stations owes more to the deliberate commercial strategies of petrol companies which attempt to conserve a homogenous visual identity than on the standardisation of construction. In the third part, I argue that behind these two primary layers of standards hides a third one, consisting in the vast series of norms and rules that are indiscriminately applied over the motorway in the name security, or comfort. These norms are part of the many “expert systems” described by Anthony Giddens. Expert systems are systems that imply an unconditional faith from the users who have to trust the reliability of the systems they use everyday, even though they have a rudimentary knowledge of their mechanisms. According to Giddens, the effect of expert systems is to lift out social events and relations from their local context and to restructure them across wider spans of space. I argue that expert systems, and the different forms of expertise associated with the motorway system, act as devices mediating the systemic logic of flows down to urban realities. The fourth part concentrates on the negotiable aspects of standards. The ISO norms, like many other expert systems, are subject of endless negotiations between experts, politicians, interest groups, and individuals. They are likely to be changed over time, and regularly renegotiated. Although they often rest on a very technical expertise, standards, I argue,

involve social, cultural, as well as political aspects. They participate of a “market democracy” suggesting that the shape of the motorway does not actually impose itself as given and irremediable logic. Standards appear then as a complex process that does not only imply the self-similar reproduction of signs and objects, but also the presence of a quantity of invisible rules and codes, from which we only perceive a superficial and provisory expression.

NEW LEGALITIES

The intensification of global economies has encouraged flexible modes of production, involving the interpenetration of very different sectors, and a growing interaction between remote places and people of very different cultures. Such long-distance interactions have entailed a growing use of standard objects and languages providing the necessary platform to trade and debate. Saskia Sassen (1999) explains in an article on the temporalities of global economies that in order to embed global economies within localities new “legalities” have to be produced. These legalities are legal forms that countries, or national institutions such as central banks, produce in order to implement global operations. They consist in a vast set of international standards that take the form of packages. They are used by many professionals and executives who work in the most globalised sectors, notably financial, legal, accounting, and telecommunication services.

Although the space of global economies is undeniably detached from local contexts, the infrastructure that makes possible the mobility of capital remains embedded in many national territories. Global flows are thus necessarily mediated by national and local institutions. Sassen explains that this situation leads countries to create their own standards so as to implement global rules according to their own trajectory. Thus implementing global economies in the context of a country or a city implies more than a reduction of regulations. It happens under very specific conditions, which usually require the production of new rules and new regulations.

If global economies tend to create an abstract and deterritorialised geography, they also hit the ground at some point, and apply their standards to the physical language of urban space. Hence, the standards that are produced in order to encase global operations inevitably translate into specific urban environments. According to Sassen, the deployment of new legalities means in turn a certain standardised built environment. For her, the standard vocabulary of global economies materialises in the emblematic space of international business: a cross-border grid of brand-name airports, state-of-the art office buildings, and luxury hotels whose construction is a response to new business practices (115). Speaking of urban space, Sassen logical-

ly refers to the stereotypical architecture of banks, luxury hotels and large corporations. Just like Manuel Castells, she shows that global economies have definitely affected urban space. Yet, for her, this articulation does not operate through flows, but through standards. By raising the role of legalities, she thus adds an important point to Castells' argument.

PREFABRICATION AND COMMERCIAL STRATEGIES

If standard spaces can be interpreted as a consequence of the rise of global economies, then the motorway network, with its relentless and repetitive flow of signs, and logos of petrol companies, definitely is one of its avatars. Following this hypothesis, I wish to demonstrate that the process of standardisation that shapes the motorway is more complex than it seems at first sight. I would distinguish at least three distinct forms of standardisation.

The first form of standardisation we can identify on the motorway takes its origins in the early industrial modes of production, which consisted in mass-producing elementary modules meant to be assembled through various configurations. After it was applied to small and relatively simple objects, this practice of modules was thus applied to the scale of buildings, as a way of rationalising and minimising the costs of construction. Petrol stations, when they were first invented in America, were prefabricated to respond to the necessity of being dismantled and moved somewhere else on more road. Hence, in the 20s, the American road system was not yet widely developed. Zones of traffic could change of location relatively quickly, and it became useful to conceive of petrol stations as small buildings that could be easily displaced to a new site where traffic was higher. This first form of standardisation went so far that numerous prefabricated models of stations could be chosen from catalogues.

Yet, according to Agnès Sanders (1995), this industrial form of standardisation did not systematically lead to the repetition of similar buildings, since many models were available on the catalogues (207). For her, the extreme similarity of petrol stations was, and still is, due to a second form of standardisation expressed by the attempts of petrol companies to homogenise their global image. This standardisation is not determined by the need to rationalise construction anymore, but deliberate strategies of multinational companies aimed at improving the legibility and homogeneity of their visual identity. In the 80s, the competition between petrol companies getting stronger, chains of gas stations attempted to restructure their network of stations, and homogenised their image and design. The whole Europe of petrol stations suddenly witnessed a process of restructuration, where companies tried to re-concentrate their network, in order to reduce the costs related to logistics and the sup-

ply of petrol. This resulted in a large process of exchange of stations between the different petrol companies. Fina, for instance, reinforced its presence in the north and west regions of France. It exchanged stations with Mobil, and sold others to the Italian company Agip. An agreement with Total allowed the German company Aral to concentrate its activity in Eastern Europe. At the same time, Total sold the entirety of its petrol stations in Greece, and the German company DEA bought some of its stations situated in the East of France. Besides these exchanges, petrol companies also found new partners to diversify the scope of the services they could offer to their clientele. Elf, for instance, entered into partnership with Formule 1, a chain of hotels, Carget, a car wash company, Europcar, a car rent company, and Casino, a chain of supermarkets. It also found partners such as the French Post Company and France Telecom, that installed various distributors and post boxes.

All these strategies forced petrol companies to renew the image of their stations regularly, while associating it to the image of other companies. To anticipate these changes, they started establishing precise sets of graphical and architectural norms, which could be easily applied on their whole European network. These strategies particularly affected the design of the stations, and still does today. To follow these changing strategies of exchange and re-concentration, petrol stations are now conceived through the most simple shapes and standard configurations – basically a neutral box for the building, and a flat platform for the canopy, over which, signs and logos can be indifferently applied. Having now restricted the architectural vocabulary of their buildings, petrol companies can economically keep a homogenous network of stations, even though it undergoes periodical transformations. This second form of standardisation, which we can define as commercial, rather than constructive, shows that the self-similar reproduction of service areas on the motorway does not stem from the rationalisation of building construction, or the application of industrial modes of prefabrication to architecture. What makes all service areas look so much the same is the deliberate strategy of petrol companies to apply a homogenous design on a network of stations which is intended to undergo periodical reorganisations.

EXPERT SYSTEMS

The visual repetition of similar signs along the motorway is not yet the only expression of the process of standardisation. As we look carefully at the many signs displayed along the motorway, we see that they are not only composed of brands and logos. A lot of these signs are signals or codes taking the form of road signs or abstract graphics indicating what we can and what we cannot do. They tell about the

rules of the motorway and inform users that they are surrounded by a whole series of systems guaranteeing their control, safety and comfort. They give them “guarantees” of expectations. They are the proof that the motorway will remain as safe and reliable as it is supposed to be. All these codes evoke a third form of standardisation, a standardisation that shapes the motorway discretely, through many invisible norms involved in its construction, its everyday usage and maintenance.

These norms are an expression of what Anthony Giddens (1990) calls “expert systems”. For Giddens, expert systems are “systems of technical accomplishment or professional expertise that organise large areas of the material and social environments in which we live today” (27). They are systems that rely on a pragmatic trust of the users, based upon the experience that such or such system generally works as it is supposed to do. Giddens illustrates himself the ubiquitous presence of expert systems through his experience of the road system:

When I go out of the house and get into a car, I enter settings which are thoroughly permeated by expert knowledge – involving the design and construction of automobiles, highways, intersections, traffic light, and many other items. Everyone knows that driving is a dangerous activity, entailing the risk of an accident. In choosing to go out in the car, I accept that risk, but rely upon the aforesaid expertise to guarantee that it is minimised as far as possible. I have very little knowledge of how the car works and could only carry out minor repairs upon it myself should it go wrong. I have minimal knowledge about the technicalities of modes of road building, the maintaining of the road surfaces, or the computers which help control the movement of the traffic. When I park the car at the airport and board a plane, I enter other expert systems, of which my own technical knowledge is at best rudimentary. (28)

It is not accidental for Giddens to choose the example of airport and the road system to illustrate the influence of expert systems. Transportation infrastructures create places that are particularly permeated by technical knowledge. Lash and Urry (1994) link the role of expert systems to the modern experience of rapid mobility across long distances. They explain that trust in expert systems particularly arises from the development of professional knowledge included in the forms of transport, which convey people through time and space: “Mobility depends upon the development of trust in professional experts who have devised systems of mass travel and transport which at least initially limit the risk involved” (254). According to them, the earliest expressions of expert systems applied to transportation can be traced in Thomas and John Cook’s com-

pany which, in the middle of the 19th century, first constructed professional expertise in travel and tourism. Today, this risk-related expertise has infused the network of the motorway, in the form of an extensively standardised system of roads, hotels, and petrol stations, whose functional design leaves little space for risky, improvised, or adventurous manoeuvres. Service areas, in particular, comply to a vast amount of norms and regulations that epitomise the crystallisation of global standards, statistics and numbers, into the generic architecture of our contemporary built environments.

If transportation infrastructures, such as motorways, petrol stations and airports provide particularly good illustrations of the extensive application of expert systems over spaces, this does not lessen the increasing role of technical expertise in the entire field of architecture and urban planning. Through their examples, both Giddens and Lash & Urry demonstrate that expert systems increasingly shape urban spaces, and that we all tend to align ourselves with the kind of trust in the expertise they involve. Of course, we all consult “professionals”, such as lawyers, or doctors. But it is only in a periodic or irregular fashion. Expert systems, on the contrary, influence many aspects of what we do in a continuous way. The continuous influence of expert systems is particularly evident when it applies to the stability, and the long-term planning of buildings. Bart Lootsma raises in several of his articles the increasing use of expert systems in the fields of architecture and urban planning. Thus, both fields entail an increasing amount of rules, norms, empirical laws and jurisprudence. They involve a whole range of experts, ranging from the urban planner, the structure engineer, the organism of control, and other security experts. The paradox of this profound influence of expert systems on our built environments is that the more expert systems are embedded in long-term settings, the more they are omnipresent in our lives, and the less we notice them.

Despite their discrete presence, expert systems tend to restructure our social apprehension of space. Giddens explains that expert systems disembody social events and relations from their contexts. By the term “disembedding”, Giddens means that expert systems literally lift out social relations from their local context of interaction, and restructure them across over much longer distances. Hence, the motorway removes people and events from the immediacies of their surrounding contexts, and redistributes them along its network. But if Giddens notes that expert systems lift out social relations from their proximate surroundings, he also observes the reverse and complementary process. Expert systems do not only disembody events and social relations, they also reembed them. The motorway, for instance, provides the possibility of reembedding, by making it easy to visit close relatives who are far away. We can experience this process of reembedding when new improvised activities take place in the hyper-functionally designed space of service areas, and when roads, car

parks and traffic jams become the public places of the commuters' shared experience. Thus, when neighbourhoods disappear, equally characteristic is the recreation of places of relative informality confirming the possible reembedding of events and social relations. As an increasing part of our intimacy is now linked to the brand names of transnational companies, and the generic spaces of airports and supermarkets, our lives become more and more infused with the subliminal standardisation that we experience through expert systems.

STANDARDISATION AS NEGOTIATION

Standards involve intense processes of negotiation, which often convey a political dimension. When they are not fully established, or when they need to be up-dated, they imply the constitution of working groups and alliances whose role is to define the outer limits of a design or a situation by pointing out where exactly negotiations can take place. In the construction of building, for instance, the many participants, in which one can include the local residents, the future employees of the client, the local industries which would benefit from the infrastructure, journalists or local politicians, create a complex field of influence. In the development of global economies, standards have become such a key issue that their production and adaptation now entail a complex network of global, national and local organisations. The purpose of these organisations is clearly to encourage free-market economies. Their task consists in reaching consensual agreements on the base of identifiable, clearly defined common references that can be recognised among trading partners. They promote a sort of technocratic Esperanto that ensures the homogenous use of materials and products. The standards they develop take many forms; they rank from the standardisation of telephone, credit cards, symbols units, measurements, paper sizes, freight containers, and many other systems enabling the networks of transport and communication to interface each other.

The interesting aspect of these organisations is that they are highly decentralised, thus admitting a certain form of democracy. They distribute themselves into thousands of technical committees and subcommittees, involving representatives of industries, research institutes, government authorities, and consumer bodies. They work around a whole network of parallel organisations that are either global and working on specific sectors, or local and serving as intermediaries. They also involve interest groups and individuals who can oppose a certain resistance against the decisions they disapprove. Thus, according to Bart Lootsma (1998), new legislation offers the opportunity for individuals to lodge appeals against a whole range of initiatives taken by the government or industries.

New legislation, reflecting the dual goals of an open market and minimal government interference, is characterised both by deregulation and by the effects of consultation procedures (...). Government and industry together reach agreements about production norms but special interest groups also organise themselves and in turn negotiate on norms and rules with both governments and industry. (33)

Lootsma shows here that the enlarged process of negotiation taking place around the creation or the modification of standards does not restrict itself to the top sphere of international experts, but also encompasses large parts of the population. For him, this process of negotiation calls for a new form of politics, which takes shape from the bottom-up, and offers individuals a bigger role. Although public authorities and businesses are largely responsible for determining the production of standards, private investors and interest groups are also involved in the process, and react to official standards and legislation itself, by setting their own “empirical standards”, referring to their own “laws of experience”. According to Lootsma these negotiations tend to define a new market democracy.

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In this chapter, we have seen that standards could take very different forms, each revealing a particular aspect of the standardisation process that is shaping our contemporary urban environments. The earliest expressions of standardisation stem from the implementation of industrial modes of production. They correspond to a rationalisation of construction methods, and evoke, when applied to architecture, a certain practice of modules. Standardisation carries in this view a very technical meaning. The relentless repetition of signs and logos on the motorway reveals a second form of standardisation, which purpose is not technical, but commercial. Petrol companies thus elaborate large-scale strategies aiming at unifying the image of their stations. Standardisation appears then as a deliberate action of companies attempting to impose their visual identity on a global scale. The paradox of this standardisation is that it provides travellers with a new global sense of place, and the global strategies of companies with a social and cognitive dimension. A third form of standardisation arises with the influence of expert systems on built environments. Hence, much of the motorway’s actual shape results from invisible norms and rules, ensuring a minimum and homogenous level of comfort and security all along the network. This form of expertise, particularly present in the planning and construction of transportation infrastructures is the necessary counterpart to their connection to global networks of infrastructures. The problem is that it detaches places, events and relations from their local context. Giddens yet demonstrates through his con-

cept of expert systems, that it also involves the reverse and complementary process: when standardisation lifts out social relations and events from local involvements, it also recombines them across wider spans of space. This results in the stretching out of space that we all experience as we drive down a motorway cutting through several different countries.

A lot has been said against standardisation. Henri Lefèbvre (1981) has long argued that the process of normalisation, associated with global circuits, has led to an abstraction of space emphasising its exchange value to the detriment of its concrete, social and local reality. The different forms of standards we have investigated in this chapter show that the process of standardisation cannot yet be reduced to a mere repetition of signs and objects stemming from global developments. For, if the process of standardisation issued from expert systems surely responds to notions of normality or exchangeability, it also involves very concrete debates and negotiations between experts, users, local communities, journalists and politicians. The increasing influence of expert systems demonstrates that standards are not just fixed and definitive laws, blindly imposed by a technocratic power. They also consist in intricate packages of rules, norms, codes and protocols, which are intensively discussed and negotiated. Hence, the systems of presumed expertise in the fields of money, security, law, or insurance, encompass a multiplicity of standards which are in permanent re-evaluation and negotiation. This new dimension of standardisation takes a particularly clear expression in the actions of international organisations such as ISO, which involve experts from all countries, and endless discussions around the homogenisation of international standards. The increasing role of these organisations raises the fact that most of the objects that compose urban landscapes result from complex processes of negotiation. So, if standards affect the meaning of places, they also retrieve these meanings through the debates that are necessary to keep them effective and up-to-date. Standardisation takes, in my sense, a very political dimension that coincides with the materialisation of global flows in urban space. It participates in the complexity of our contemporary environments ways that go way beyond the world of stereotypical business centres and corporate buildings. Standardisation, I argue, becomes a key process in the transition between a global space of flows, infused by global norms and legal forms, and the physical spaces which we inhabit.

3.1 FROM MODULES TO MODULATIONS

Standardisation (...) effaces the difference between the center and the margins. And although it may be an exaggeration to claim that we are all marginals now, all decentred in the current good sense of those words, certainly many new freedoms have been won in the process whereby globalization has meant a decentring and a proliferation of differences. (Jameson 1998, 66)

It is today common place to blame standardisation for erasing differences between cities, countries and cultures, for producing self-similar objects, and more and more homogenous landscapes. Since the early implementation of industrial modes of production in 1950s American suburbs, the standardisation of urban space has thus gone beyond all predictions and forecasts. Its effects are principally linked to the growing influence of global systems of trade and services, which have increased ad infinitum the number of labels and marks, and branded all cities of the world with the same logos. But this overall uniformisation of space is not the only aspect of standardisation. For, when we look at the peripheral condition of cities, with their standardised networks of high-rise office buildings, communication thoroughfares, airports and shopping malls, we see that our contemporary urban landscapes are characterised by an unprecedented complexity. They are composed of many standard objects that respond to stereotypical images and aesthetics, but the crude juxtaposition of these ob-

jects, added to their slight variations, creates a very eclectic landscape which is anything but uniform. Can standardisation create differences? Can we move beyond a comprehension of standards that comes down to a repetition of elementary modules? Hasn't standardisation gained a new role, and a new creative potential?

In the previous chapter, we have seen that standardisation was a key process in the articulation between global flows and the realities of everyday life. We have also seen that it could take several forms, and carry various meanings: technical, commercial, social, cognitive, as well as political. In the light of this analysis, I now argue that standards also carry a creative dimension, and that the process of standardisation is not as systemic and determinate as it might seem. Hence, standardisation translates into such a vast number of objects, buildings and networks that it actually instigates a new complexity in our contemporary urban landscape. Its intensification involves the creation of many layers of generic infrastructures that allow for infinite combinations and immense variations. If the process of standardisation used to produce uniformity, we need to admit that it is the opposite that happens today. Standardisation creates differences more than it erases them.

My objective in this chapter is to raise the positive aspects of the standardisation process as it asserts the global influence of flows on urban space. I try to raise a progressive conception of standards, through which we can comprehend standardisation as a creative process. In order to link the notion of standard to the increasing complexity of the new urban landscape, and more particularly to the shift from suburbia to periphery, I draw on a series of theoretical references that emphasise the technological aspect of today's urban landscapes, as well as the determinant role of generic infrastructures.

The first part focuses on the early developments of suburbs in the 1950s when the standardisation of urban space reflected the rationalisation of construction methods through the endless repetition of the same modules. In this part, I mainly draw on Michael Sorkin's critical essay on the new American city where he compares suburban sprawl to a television broadcast, which erases all differences and leads to create generic and uniform spaces. This form of standardisation is what Henri Lefèbvre (1981) labelled "the practice of modules". In the second part, I attempt to explain how today's peripheries have reached the degree of complexity that we know, while being simultaneously shaped by unprecedented standardisation. I raise the fact that post-industrial economies have led to a diversification of the market, and new modes of production capable of adapting to the variation of the demand and the multiplication of niche markets. These "economies of scope", as David Harvey (1989) names them, have induced a more flexible and complex urban condition involving the multiplication of standard objects, rather than their decrease. I then relate the actual ef-

fect of standardisation to a shift from hardware to software infrastructure. More and more the elementary entities of the city's development are made of information and technologies. The increasingly technological nature of the urban landscape thus raises the shifting nature of standards, as they do not translate in one-standing objects anymore, but into "quasi objects" meant to connect, or give access to technical networks. These quasi-objects are so deeply embedded within the networks they connect that we can hardly distinguish them. Yet, their discrete and ubiquitous presence highlights the fact that the production of standards in cities, has become a process whose function is to ensure the compatibility between the different layers of infrastructures that construct our contemporary urban landscape. In the fourth part, I take the example of TCP/IP protocols, which illustrate the way standards can actually develop through natural and progressive implementation, rather than through the authoritative imposition of a norm. This progressive development generation of standards oppose itself to the technocratic character of norms that are usually imposed to ensure a strict conformity. Thus, the incremental adoption of the TCP/IP by a world wide community of Internet users, as well as their capacity to be regularly upgraded, raises a progressive conception of standards which contradicts the old form of standardisation defined by Lefèbvre. I thus oppose Lefèbvre's argument the fact that standards do not consist of modules of assemblage, but mediums of exchange. In the last part, I argue that the shifting nature of standards responds to the more flexible structure of society. François Ascher notably explains that people belong simultaneously to different layers of society, and shift more and more easily from one to another. In this context, standard and generic infrastructures become the means that allow to establish flexible and multiple connections between people and places, and to ensure the compatibility of existing networks, whether social or technical. The process of standardisation shifts then from being a means of mass-production and spatial expansion, to being a means of change and combination.

SUBURBS: THE PRACTICE OF MODULES

Many authors of social theory have associated the explosion of so-called "suburban cities" in the 1950s to an increasing standardisation of urban space, stressing the fact that suburban sprawl was the result of a direct and massive implementation of Fordist industrial modes of production to urban space. Hence, suburbs can be seen as the purest expression of modern concerns for the rationalisation of urban patterns and the use of modular techniques of construction. Michael Sorkin (1992, 12) compares the standardisation of American suburbs to a process of erasure and increasing uniformisation of urban space. He argues that the structure of cities has be-

come like a television broadcast which tends to erase differences among the many and diverse programmes, so that any of the combinations can make sense. In his description, the process of standardisation translates in a “universal particular” and a “generic urbanism”. It reflects the repetitive hierarchies of suburbs and the decreasing identity of places, both linked to the basic repetition of similar buildings. Standardisation, in that sense, translates the idea of an overall industrialisation of building methods meaning to renew the selfsame formulae in a denial of local specificity and differences. It thus reflects the application of mass production, made possible in the 1950s and 1960s by the standardisation of industrial products, to urban space.

Frank Lloyd Wright had long anticipated the development of American suburbs. In the thirties he had promoted the utopian scheme “Broadacre City”. Broadacre city consisted in a plan for a decentralised city associating the personal automobile and low density development. Ideal communities located away from large cities would have combined social values with contemporary concerns about technology, encompassing the car, communications, electric power, manufacturing, transportation, and different systems of construction. The large model that represented the project was similar to a green matrix marked by a grid of arterial roads. The major intersections were points of concentration, giving access to large markets as well as churches and other institutions of mass civic and cultural life. Broadacre city was based on a democratic model, and an ambivalent form of socialism mixing social cooperation with fierce individualism. A number of items from this model have lasted and unremittingly marked the suburban landscape: super highways, overpasses, motels... However, most of its collective ideals were lost. Wright had notably envisioned the suburbs as places of production, where families would enjoy access to small farms, orchards and recreation areas, with light industry and other urban facilities all within 10 to 20 miles from their house. The typical suburban homestead turned out not to be the site of wealth production but the source of it. Also, in Wright’s original idea, houses were to be designed as built by their owners in any style they wished. No two houses would ever look the same.

Far from the diversity envisioned by Wright, suburbs developed as a homogenous space, typified by module-like houses repeating themselves through a seemingly endless expansion of existing cities. Suburban sprawl, with its concentrating rings of land uses and density gradients declining neatly from the core to the periphery came to translate the rigid and hierarchical character of the industrial society. It came to reflect an economy of scale where production was competitive through a good cost/price relationship, and where excesses of capital were absorbed by horizontal sprawl. The standardisation of suburbs participated then of a modern perspective of linear progress and rational planning, a kind of revived version of the Enlightenment project.

PERIPHERIES: THE MULTIPLICATION OF STANDARDS

Today, the global development of a standardised network of high-rise office blocks, communications thoroughfares, airports, and shopping malls has constructed a distressed landscape typified by unprecedented standardisation, thus bringing the normalisation of suburban space bequeathed by industrialisation of the 1950s beyond all predictions and forecasts. These recent peripheral developments have raised a new and paradoxical aspect of the standardisation process. For, instead of homogenising urban space, standardisation has actually increased territorial inequalities, and the many differences that characterise the heterogeneous fabric of the periphery. This paradox originates, in my opinion, from a very recent economic change. Since the economy of scale has shifted to an economy of scope, production is no longer competitive through a cost/price relationship, but through its diversification and its capacity to adjust to a constantly evolving demand. More and more signs, objects and services are then produced, and the overall production becomes more differentiated and more complex. The same phenomenon applies at the city level where the production of urban space becomes also more complex. Suburbs, in particular, have evolved towards a much more composite urban form (Zaera-Polo 1994). They have turned into vast peripheries the flexible condition of which enables cities to fix erratic flows of capital, and absorb the constantly changing geographies of capital. They have transformed into complex webs efficiently knotted into a series of “edge cities”, able to capture the fluid and eccentric nature of post-Fordist economies, as well as their multiple niche markets. Following the shift from economies of scale to economies of scope, mono-functional suburbs have thus become vast and heterogeneous urban conditions fuelled by large-scale activities and multiple sub-centres: concert halls, stadiums, amusement parks, DIY supermarkets, chains of hotels, and congress centres. They have turned into an intricate bundle of networks, of multiple and interrelated centres whose positions and success depend on their capacities to adjust to changing trajectories of flows.

With the influence of communication and information networks and the subsequent generalisation of peripheral developments, standardisation has thus become a global process that carries more diversity and more complexity than the self-similar repetition of stereotypical buildings can address. This paradoxical effect of standardisation certainly finds its most striking expression in commercial and leisure complexes. Koolhaas (2000) notes that today large complexes are often composed of a few elements repeated *ad infinitum*: one type of beam, one type of brick, one type of tiles, all covered of the same colour. But instead of translating a modern aesthetic of repetition, they participate of a deliberate politic of confusion attempting to infuse an artificial (and very postmodern) variety.

At the moment we abandoned regularity and repetition, because they were regarded as repressive, building materials have become more and more modular, unitary and standardised, their substance reaching a pre-digital state (before the next stage of abstraction). The module becomes smaller and smaller, reduced to a state of mosaic. Through enormous difficulties – discussions, negotiations, sabotage – irregularity and unity are elaborated from a few standard elements. Instead of pulling order out of chaos, we now draw picturesque out of homogeneity. (747 trans.)

Koolhaas shows here that means of standard production are now used in architecture to create increasingly complex spaces. Standardisation does not refer to an ideal of linear progress and modern composition anymore, but serves the artificial aesthetic of mass culture and transitory activities. Since standards have infused the conception and use of every single object and infrastructure, the process of standardisation has thus acquired a variety of expressions, and created unprecedented differences and complexities.

SOFTWARE INFRASTRUCTURE

Since the urbanisation of cities is more and more correlated to the development of communication and transportation networks, the process of standardisation becomes intrinsically related to the multiplication of generic infrastructures. Hence, Bert Mulder (1998) explains that standardisation is the very process through which we transform the structures we usually work in into generic infrastructures:

If you want to create an environment that is fully flexible, that continuously adapts to the change that is the context, where nothing is fixed, where we only have flows, where we only have change, what you do is create a generic infrastructure. (...) There's a global infrastructure for money, for design, for logistics, for the handling of materials, for production. (...) You don't know how it works, but it allows you to do something else, like money, like the legal system, like roads, like culture in a way. (1)

“Generic”, in Mulder's sense, means that infrastructures become ubiquitous, that they always operate, and that they can be continuously adaptive to change, and controlled at distance. It marks a shift from the modern perspective associating infrastructures with an ideal of mobility and large territorial planning, to a more recent conception that associates infrastructures with soft and flexible devices. Under indus-

trial regimes, infrastructures like such as the motorway or factories were conceived of as hard, heavy and fixed supports. They implied long-term investments and were meant to deepen productive forces, and fix flows into heavy material structures. Infrastructures were then characterised by a perpetual tension between the heaviness, the long-term standing of their construction, and the light movement of people, cars, and the information they supported. During the 1970s, this tension found its limits. Suburban cities struggling with the emerging influence of economies of flows suddenly faced the problem of renewing the rigid infrastructure they inherited from industrial regimes. Their heavy infrastructure had turned to be such a fixed investment that it could not to match the need of a fast changing geography anymore. It could not cope with an economy characterised by erratic and uncontrollable flows. It became evident therefore that the more investment crystallised into fixed spatial configurations, the less likely it became that space could be further modified without being devalued. Reacting to the obsolescence of their “hardware” infrastructures, cities have recently come to favour “software” infrastructures that can be regularly updated, and adapted to the fluctuations of an urban matrix which is in perpetual flux. Today, for instance, the urbanisation of cities is not only shaped by the development of their transportation facilities, but also by flexible and virtual networks, such as networks of small culture industries. Here, I think of networks of creative offices working in the fields of events, music or design. Such informal networks are encouraged by city governments because their ramified structure does not imply a very long-term vision. Instead of acting like the physical support of flows, like the wires or the hard-disk of a computer, they act as soft components, like COTS (components of the shelf), which can be programmed and upgraded. Infrastructures become then similar to computer softwares that provide an interface between the population and the city’s physical structure, and between users and producers. We can therefore identify in today’s urban policies a shift from hardware to software, the hardware addressing the heavy and rigid infrastructure of the industrial suburbs, the software corresponding to the flexible and upgradeable networks of the post-industrial periphery.

STANDARDS AS MEDIUMS OF EXCHANGE

The shift from hardware to software infrastructure results in a redefinition of standards. Standards are not the physical and primary modules of the city’s linear expansion, but “quasi objects” loaded with information and technologies. Standards thus turn into protocols of exchange, providing the process of standardisation with a new creative potential. TCP/IP protocols which we find on the Internet are a good illustration of this new meaning of standards. The Internet is a global network that does not

follow a specific infrastructure, but thousands of local infrastructures, either public or private. All these infrastructures are connected through standards, which everybody tend to comply with, so as to benefit from the mass effect of the Internet. TCP/IP protocols are certainly one the oldest and most fundamental of these standards. They play the role of protocols that allow sounds and images to flow across the Internet, regardless of the innumerable infrastructures that compose its network. They were developed at the end of the 1960s, to circulate along any kind of physical network, from cables to satellites, and enable the Internet to be diffused along heterogeneous networks. TCP/IP protocols allowed to break the information down into small packages, which were transmitted independently from each other. When they reached their final destination, they were reassembled to reconstitute the original message. The advantage of this communication by small packages was that there was no pre-defined route. If one route was congested, the packages were reoriented to go round the jam. This process also appeared to be particularly tolerant to the bugs that could affect any location of the network.

The interesting aspect of TCP/IP protocols, as opposed to usual norms, is that they have never been imposed by any particular instance of power. They have become a standard through a progressive adoption by the users. Also, they regularly integrate new functions such as user priorities, secured transfers of information, or acknowledgements of receipt. Hence, along with this incremental process of implementation, TCP/IP protocols have singularly evolved. Since they have been adopted by an increasing amount of users, they have undergone various upgrades, and benefited from many feed-backs and returns of experience. This natural process of transformation allows them to remain a widely used protocol of exchange, and a continuously evolving standard.

HYPERTEXT METAPHOR

The changing nature of standards, exemplified by TCP/IP protocols, and the correlated shift from hardware to software respond, in my sense, to a more flexible organisation of the social structure, a new stage of society which François Ascher (2001) identifies as the “hypertext society” (40). The hypertext society, he explains, is characterised by a weakening of social links. Social relations do not disappear, but they become more fragile, more numerous, and more subject to change. This fragility makes it easier, in turn, to produce new links, whether professional, or intimate. This is the strength, he says, of these weak links. Moreover, these weak social links involve a form of solidarity that is “commutative”, for it relates people and organisations that belong themselves to a multiplicity of interconnected networks. When Ascher uses the metaphor

of the hypertext, he refers to the process that allows us, when we browse the Internet, to click on a word in a given text and access simultaneously the same word in other texts. The hypertext metaphor thus reflects a layered organisation of society, a *n*-dimension space, where people belong simultaneously to different layers and shift more and more easily from one to another.

In this new context, infrastructures hold a determinant role since they are the means that establish the connection between people and places, and ensure the compatibility of existing networks, whether social or technical. The Internet is certainly the most striking example of the connective and adaptable quality of infrastructures, as it can be reached from almost everywhere, and contains a great variety of formats, such as sounds, images, texts and videos. The motorway, by contrast, appears as a remnant of the old Fordist generation of infrastructures, bearing a very rigid and permanent character. I would yet argue that the massive development of software infrastructures induces a retroactive phenomena reflecting on the way hardware infrastructures, such as the motorway network or factories, are now conceived. Today, for instance, factories are systematically turned into cultural centres. The motorway network tends to integrate an increasing amount of activities which did not originally partake of its primary function of transit. It also integrates various technologies such as GPS and systems of video surveillance that infuse its everyday uses and maintenance. The shift from hardware to software infrastructures does not therefore imply the systematic replacement of the old infrastructure by a new one. As it is incrementally updated to comply with the latest standards set by new communication technologies, the old Fordist infrastructure, I argue, adapts its shape and meaning to the flexible structure of the hypertext society.

The reason why the homogenising effect of the standardisation process has virtually turned into its opposite lies therefore in the shifting nature of standards themselves. In suburbs of the 1950s, standards were embodied in well-defined objects and infrastructures, such as houses, factories, or shopping malls, which were the elementary modules of the iterative expansion of cities. Today, these elementary modules consist of technical objects and networks whose function is to connect and give access to the many layers that compose the contemporary urban landscape. Their nature is not as univocal as that of a factory or a single-family house, for it is the information that contains that matters. They are often so deeply embedded within the technical networks they work in that we can hardly distinguish them. Their discrete and ubiquitous presence reveals yet a new and determinant function of urban standards. Now that the city has become a general condition, standards are not meant to bring its expansion any further, but to ensure the compatibility and the cohesion of the many layers of networks and infrastructures along which it has expanded. The proc-

ess of standardisation shifts from being a means of mass-production and spatial expansion, always addressing basic matters of growth and quantity, to being a means of change and adaptability.

In this chapter, we have seen that the standardisation is a paradoxical process that increases the complexity of urban environments, more than it reduces it. Since it has been pushed to its most extreme expression, it has thus turned into a factor of difference and heterogeneity. In the 1950s, it was associated with the centrifugal expansion of cities, correlative to the increasing homogenisation of their urban landscape. But, today with the rise of information and communication technologies, the emergence of flexible modes of production, and the ultimate development of urban peripheries, standardisation has taken a far more complex form. Shopping malls, airports, and the many objects that compose the chaotic landscape of the periphery reflect an unprecedented multiplication of standards. These standards are not as univocal as the 1950s suburban house. Many remain invisible. They bear a very technical nature, and form together a vast technological landscape. Their role is to allow the transfer between the different networks that compose the periphery, as well as to ensure their compatibility. Moreover, we have seen that the function of standard is concomitant with a shift from hardware to software infrastructure. The new software infrastructure is no longer made of factories, bridges or motorways, but of creative people, small culture industries, mobile phones, and credit cards. It is flexible, adaptable, and allows many combinations. This new software infrastructure is not less standardised than its predecessor, but it gives standards a more creative role. Standards are not the elementary modules of the city's seamless expansion, but mediums of exchange, acting just like digital money or Internet protocols.

We should no longer see standardisation therefore as a determinate and inevitable process of homogenisation. Since it implies the multiplication of infrastructures, of signs and objects, it also creates differences and singularities. In the field of architecture and design, the creative use of standards is in its very early stage of implementation. French architect Bernard Cache (1997) explains that new techniques of production allow to produce series of objects within which every object is singular and unique. Robots can cut and laminate frames of any material in any shapes and spans; and each frame can vary from the next. The evolution of design and building technologies involving the use of computer-controlled robots thus transforms our conception of standards. Standards are not so much about the material or the size of objects anymore, but instead about the software that serves to define their shape. What matters is not the intelligence of a single and precise object, but its potential process of transformation. Cache's argument suggests that with the rise of flexible

modes production responding to the increasing diversification of our social behaviours, the purpose of the norm is not to stabilise the appearance of objects anymore but to amplify their fluctuations. The evolution of production techniques involves therefore a shift from “from moulds to modulation” (63). Likewise, I suggest that the vast urban continuum of the periphery has shifted the meaning of standardisation from modules to modulations.

3.2 STANDARD- ISATION AS CREATIVE REPETITION

When I undertook to classify the thousands of photographs that compose my video catalogue of petrol stations, my aim was to emphasise the serial character of the motorway. It was thus driven by a certain critical view of its extensive standardisation. This classification showed yet that the act of repetition that constructs today the relentless homogeneity of its territory also creates a number of differences, and that it is not as systematic as it seems at first sight. The catalogue reveals, in my sense, two major sources of difference. The first one stems from the variations that each item undergoes among the different countries. Hence, each country develops a certain culture of the motorway, a certain aesthetic coincident with the local practice of the motorway system. In France, for instance, service areas are designed like theme-parks. Each one attempts to display a specific local flavour. The route that leads through the station participates of a precisely controlled and orchestrated choreography that forces drivers to make their way through an exhaustive labyrinth of functional and commercial areas. Dutch service areas are based on a totally different perspective. They are reduced to a minimal shape – basically a box and a car park – that bears absolutely no variation from station to station. This minimal configuration does not usually call for any extra activities than the strict services a petrol station is supposed to provide: refuel, eat, and go. One way to interpret the difference between France and the Netherlands is that motorways in the Netherlands are embed-

ded in a very dense urban condition. The cities that compose the Randstad thus absorb all forms of activities, leaving nothing to the motorway. Another way to interpret this difference is to consider that the density of traffic being also higher in the Netherlands, social relations are more likely to occur during the time spent in the traffic jams that regularly saturate the Dutch motorway system, than during the short time spent in petrol stations. This comparison between France and the Netherlands could of course be extended to a global comparison between the eleven countries visited during the trip. But the problem I see with this first source of difference is that it responds to a geographical view of the motorway focused on national borders, when the specificity of the motorway is precisely to transcend these borders.

I see a second source of difference which, in my sense, relates more specifically to the inner logic of the motorway. As we consider the different contact sheets put side by side, we see that differences also occur among the various items of the catalogue. This source of difference stems directly from the specific kind of repetition induced by the motorway. A notable aspect of this repetition is that it engenders a number of series that is in no way limited. At the beginning of the trip, I started with a provisional index of 10 series. As the exploration went on, the number of series quickly grew and reached 20, and 30... I thus realised that the standard landscape of the motorway was a lot more complex than I had imagined. I realised that the repetition I intended to capture was not a blind and obstinate reproduction of identical modules, but a source of differences that one could only perceive in the quotidian experience of the motorway.

The photographic report shows therefore that the main differences emerging from the motorway system are not those occurring among the objects of a single contact sheet – among the different countries crossed by its transnational flow – but the differences that each contact sheet, each item of the motorway creates in relation to others. As opposed to the first category of differences that takes its origin from a distant bird-eye view, this second category rises from inside the standard and repetitive system of the motorway. It reflects a series of micro-variations that do not oppose themselves to its process of repetition, but result from it. Hence, each time a new object or a new sign appears in the catalogue, it creates a difference that turns the repetition of the motorway into a subtle aesthetic vibration. The differences the motorway creates are not therefore to be found in a global comparison between regions and countries, but in its own system of expansion. They have to be conceived of as an intrinsic aspect of its serial and standard character.

This mutual contest of sameness and difference is an intrinsic feature of the logic of flows. The logic of flows is thus often associated with an increasing homogenisation of urban cultures, fashions, and life-styles. It entails the disappearance of na-

tional borders, and the emergence of a new hyperspace of transnational corporations, marked by the self-similar architecture of standard office buildings and trade centres. The paradox is that it also creates a number of differences, evidenced in the increasing contrast between connected and disconnected areas. Castells, like many authors of social theory, argues that the global flows tend to intensify spatial differences. They create a highly competitive and polarised space that increases social inequalities. Hence, global networks, such as the motorway, do not connect everything to everything. They also induce many residual spaces that fail, or refuse to take part in the global space of flows. The presence of leftover spaces on every scale – from East European countries, to black American ghettos, and derelict industrial buildings – creates a new residual condition that represents, in my view, the fatal counterpart of the implacable logic of flows.

The hypothesis here is that the issue of today's global economies lies in a complex interaction between two antagonistic and co-existent mechanisms: one of homogenisation evening local differences, and the other of differentiation stemming from the unbalanced relation between residual and over-wired places. How can the logic of flows unite such contradictory mechanisms? Can we think of a theoretical model that explains their co-existence and mutual interaction? My aim, in this chapter, is to understand how mechanisms of homogenisation and differentiation interact with each other, and the role that the process of standardisation plays in their articulation. I argue that the global geography of flows cannot be reduced to simple oppositions, for it unfolds as a vast, overlapping and disjunctive order that entails the construction of a global landscape that is far too complex to be explained through simple oppositions. This complex landscape is the result from an intensified process of standardisation, which dismantles as much as it increases differences. I thus wish to demonstrate that the process of standardisation can be conceived of as a creative act of repetition, within which differences emanate from the overlapping of multiple and contradictory mechanisms.

In the first part of this chapter, I investigate the core-periphery model. This model concentrates on relations of power between people and places, and puts the emphasis on the exacerbation of social and spatial inequalities. It opposes the dominant and exclusive character of the space of flows to the weak position of actors and places that are continuously threatened to be disconnected from global networks. Hence, the logic of flows excludes as much as it includes; and what is left outside its main stream, outside the reach of information and communication networks, remains like a marginal and abject counterpart of the asymmetrical geometry of flows. The disappearance of former industrial regions and cities from the global map shows how easily one can be instantaneously dismissed from the space of flows, and how quickly a

“tame zone” can turn into a “dead zone”. The second model I investigate is based upon thermodynamic principals. Contrarily to the core-periphery model, it stresses the attenuation of existing differences. It assumes that flows are always correlated with orders of difference. Winds, for instance, arise from the co-presence of high and low pressures. Likewise, the emergence of economic and human flows is governed by the co-presence of cheap and expensive markets. But thermodynamics also implies, in turn, that the natural movement of flows reduces those same existing differences, and leads toward a state of perfect homogeneity and equilibrium. This movement, I argue, explicates the homogenisation of spaces and cultures that accompanies the intensification of global flows. I then elaborate on Arjun Appadurai’s concept of disjuncture, which, in my sense, synthesises the two previous models. Disjunctures, as defined by Appadurai, are local tensions stemming from the complex interplay between homogenisation and heterogenisation processes. They result from conflicts occurring between flows of people, finances, images and ideologies. They evoke a new form of difference that is not simply an inequality between distinct parts of a field, between cities, countries or districts, but a tension created by intersecting flows. The last part raises the possibility of creating through repetition, and suggests that the process of standardisation can be conceived of as an expression of the disjunctive nature of global flows.

THE CORE-PERIPHERY MODEL

The core-periphery model is frequently used in socio-economic theories to explicate the spatial influence of globalisation. Castells (1989, 1992), Sassen (1998), Lash and Urry (1994), and many other authors of social theories, see global phenomena through a dual opposition between dominant economic centres and weak peripheries, between over-wired CBDs and ethnic ghettos, global cities and second rank cities, northern regions and southern regions... The core-periphery model thus applies on many scales. In Europe, for instance, cities have entered a fierce inter-urban competition. Their fate increasingly lies on their connection or disconnection from generic systems. If they do not want to be stripped of their former importance, they have no choice but to enter the competition. Their only chance lies in their capacity to work as the economic engines of the global economy. If they succeed in attracting economic flows and fixing mobile capital, they join the centre; if not, they are rejected to the periphery. Aware that companies have the possibility to settle almost anywhere, they pay closer attention to relative locational advantages. They implement new marketing methods, attractive tax policies, and various strategies of skill and culture enhancement... They thus tend to exploit the differences that distinguish them

from other cities, and affirm their singularity. In this fierce inter-urban competition, some cities are successful, and others are left aside from the map.

The same intensification of social and spatial inequalities occurs within cities. Castells (1996) explains that the logic of flows increases interactions and mutual adjustments between disjointed places, but intensifies, in turn, differences and tensions between contiguous places. “Urban space is increasingly differentiated in social terms, while being interrelated beyond physical contiguity” (404). This paradoxical form of urban coexistence is particularly visible in the context of global cities, which are “connected externally to global networks and large segments of their countries, while being internally disconnected from local populations that are either unnecessary to economic progress or socially disruptive”. Rem Koolhaas’ (1998) concept of the “City of Exacerbated Difference”, deriving from his research on the Pearl River Delta, confirms this increasing tension:

The traditional city strives for a condition of balance, harmony and a degree of homogeneity. The City of Exacerbated Difference, on the contrary, is based on the greatest possible difference between its parts – complementary or competitive. (188)

What Koolhaas shows in his diagnostic of the Asian city is that the opposition between centre and periphery is not contradictory to urban sprawl. Most urban peripheries have now grown to the point where they have created a generalised condition, where the distance between centre and circumference has increased to the breaking point. Yet, they develop through a multitude of sub-centres, thus maintaining the opposition between cores and peripheries.

“Edge cities” (Joel Garreau 1991), the western equivalents of the City of Exacerbated Difference, also demonstrate that the tension between core and periphery perpetuates itself as cities grow into large suburban territories. Edge Cities are specific urban concentrations emerging within the metropolitan fabric. They constitute functional centres integrating many activities. Although they do not bear the historical and cultural character of city centres, they participate of an urban landscape that is fragmented into multiple incorporated municipalities and cores of development. In this dispersed urban condition, locational strategies tend to concentrate industrial and commercial activities in the most accessible spots, leaving aside places that are already avoided by networks of transportation and communication. Today, when we notice an edge-city growing just at the corner of a motorway interchange, in the middle of nowhere, we see the concrete expression of these locational strategies, and the increasing differentiation they induce between connected and disconnected places. We see that the dispersed

geography of the contemporary city does not actually smoothen the core-periphery model, but instead perpetuates it on a larger scale. Historical centres lose their central position, but they are replaced by a constellation of sub-centres, which re-create their own local peripheries. Viewed from the core-periphery model, the logic of flows appears then as process that produces an ever-stronger polarisation of space on every scale. It appears as a factor of tensions and inequalities that creates a climate of urban panic, where the risk of being quickly disconnected from global networks impels cities and local governments to exploit, and reinforce flukes and existing differences.

TAME ZONES AND WILD ZONES: THE FATAL COUNTERPART

In their book “Economies of Signs and Spaces”, Lash and Urry (1994) translate the core-periphery model into an opposition between “tame zones” and “wild zone”. For them, the core comprises a series of heavily networked global cities that tend to construct a “wired village of non-contiguous communities” (28). Tame zones are well connected areas where people have access to information. Wild zones, on the other hand, emerge from isolated and disconnected areas, sometimes situated in the same cities and regions. They are composed of poorly connected areas including all cities and regions that are left aside from information networks. Lash and Urry explain that social structures (like school, family, or religion) are being replaced by information structures. Without these new information structures, socially structured spaces are replaced by unstructured spaces. The result is the kind of disorganised and residual landscapes evidenced in Eastern Europe, in American ghettos, or in the dissolute landscape of urban peripheries. Lash and Urry argue that this disparity between core and periphery is likely to grow greater (325).

In the core-periphery model, flows and residue appear as two simultaneous and reversible terms. Space becomes a resource to be exploited, treated and manipulated. To keep it as a permanent source of profit, it is regularly abandoned, expanded, and recycled. The recycling of industrial spaces allows spatial residue to be periodically saved from economic stagnation, or decay, while former central places become obsolete, and decline. The overall dominance of flows is thus counterbalanced by a residual condition that touches all scales, from third world countries, to declining industrial regions, derelict buildings, and leftover terrain along motorways. This residual condition stems from the asymmetrical nature of global economies. It reflects the inevitable residue that remains between the meshes of communication networks, the fatal counterpart of the obligatory connection to these global networks, the waste due to the purely economic logic of flows.

THE THERMODYNAMIC MODEL

The logic of flows also responds to a second theoretical model, which is more inclined to integrate notions of flux and transformation in time. Contrarily to the core-periphery model, the thermodynamic model emphasises the attenuation of differences, and the progressive homogenisation of spaces that are submitted to flows and movements. Thermodynamics presuppose that flows naturally run from high to low pressures, or from warm to cold areas. They do not define spatial inequalities as a consequence of flows, but as a pre-existing condition that governs their occurrence. Flows of money, for instance, come from the coexistence of cheap and expensive markets, the same way as winds come from differences of temperature in the atmosphere. Hence, in the space of flows, like in thermodynamics, every phenomenon can be regarded through the existing inequality by which it is conditioned. Every diversity, every change, every flow refers to a difference of intensity. Differences of tax climate or cultural appeal, act similarly to a difference of heat, or pressure. They define unbalanced intensities that govern both the trajectory and intensity of flows.

Thermodynamics imply, in turn, a quasi-universal law according to which flows tend to attenuate existing differences. According to this law, flows distribute themselves in a way that allows a natural homogenisation of diversity, and a progressive reduction of unbalanced intensities. Hence, when a wind blows from a warm to a cold area, the difference of temperature between the two areas tends to disappear. Thermodynamic principles do not refute differences here, but they assume that flows and energies always arrange themselves in time so that they finally negate each other. This uniformisation of differences evokes, in my sense, the process of cultural homogenisation that accompanies the rise of global economies. Since we have entered into a new condition of neighbourliness, even with those most distant from ourselves, most discourses upon globalization have come to criticize the homogenisation of cultures, related to either a certain “Americanisation”, or some ineffable “McDonaldisation” of the world. These criticisms echo thermodynamic principals, as they associate the intensification of global flows with a progressive erasure of local differences: flows introduce a change, but this change always leads from the uneven distribution of people, money, and images, to the final compensation of these differences. The logic of flows thus seems to cause the on-going homogenisation of cultures, fashion, and languages on a global scale.

FIELDS OF INDIVIDUATION

We have now investigated two theoretical models. The first one opposes cores to peripheries, what is fluid and mobile to what is stable and stagnant. The second is based

on thermodynamics principals and explicates the standardisation of culture on a global scale. These two models are complementary since they explain distinct and parallel phenomena. But each of them only explains one side of the coin of globalisation. The issue now is to understand how these two models interact with each other. Gilles Deleuze (1997) provides a philosophical response to this question through his concept of “field of individuation”. A field of individuation is a field that possesses an “intensive depth”, and assumes a certain thickness which is filled with differences of intensities (247). These differences are virtual; they remain as pure potential as long as they are not actualised. It is only when a communication establishes itself between them, when they integrate their reciprocal differences into a state of internal resonance that they take an actual shape, and become perceptible at the surface of the field. According to Deleuze, these differences of intensity never cease to exist. But once they reach the surface they tend to cancel each other out, in the manner of bubbles bursting on the surface of a pan of boiling water. This cancellation therefore is only a superficial phenomenon. It is real and visible, but it does not reflect the different intensities that still compose the depth of the field. Thus, for Deleuze, the process of uniformisation as it is explicated by thermodynamics is an illusion. There is always a deeper instance lying under the figures shaping the surface, a depth within which differences are solidly rooted.

As we follow Deleuze’s account, the homogenisation of cultures, the standardisation of business areas, or the increasing sameness of city centres and urban peripheries, all appear as natural but superficial phenomena. The process of differentiation governs more profound changes than the process of homogenisation. Differences, contained in the specific cultures of places, encompassing traditions, religious beliefs, or civilities, remain deeply rooted in local settings, and when globalisation seems to erase them, they actually remain, hidden but ready to induce new visible differences. We can therefore argue that the creation of spatial and social inequalities among places constitutes a deep and structuring effect of global flows on urban environments, while the increasing uniformity of modern cityscapes remains a superficial and reversible consequence.

GLOBAL DISJUNCTURES

Arjun Appadurai (1993) confirms this argument when he explains that real cultural differences result from the tensions that occur between flows, rather than between places. For him, there is not such a thing as a global homogenising force threatening the multiplicity of local cultures, whether music, housing styles, science, or constitutions. Global flows are too numerous and too eccentric to create a unique and uni-

form landscape. Hence, in the complicated global dynamics, the globalisation of culture is not the same as its homogenization:

Although it involves the use of a variety of instruments of homogenization such as armaments, advertising techniques, language hegemonies or clothing styles, the global economy always brings us back to heterogeneous dialogues of national sovereignty, free enterprise and fundamentalism. (333)

For Appadurai, global economies create a complex, overlapping and disjunctive order, which cannot any longer be understood in terms of existing centre-periphery models (even those which might account for multiple centres and peripheries), or any binary model: “The global economy is not susceptible to simple models of push and pull, of surplus and deficits, or consumers and producers, as in most neo-Marxist theories, and traditional models of balance or trade” (324). To explain the complex interaction between the processes of uniformisation and differentiation, without yet relying on a binary model, he defines five “scapes”, corresponding to five types of flows: ethnoscapescapes, mediascapescapes, technoscapescapes, finanscapescapes, and ideoscapescapes. Each of these scapes defines a global path along which flows of people, technologies or finance unfold and overlap each other. As they intersect and often contradict each other, they create tensions, which Appadurai defines as “disjunctures”. For him, these disjunctures are the key to comprehend global economies; they are the driving forces of global systems. They constitute much deeper differences than the uneven distribution of tame and wild zones. Although they are not as visible as the temporary decay of a former industrial district, they reflect profound disparities whose effects are more structural than the harsh juxtaposition of business districts and residual ghettos. Appadurai’s concept of disjuncture introduces therefore a notion of difference that does not stem from an inequality between places, but from a tension resulting from the encounter of different flows.

CREATIVE REPETITION

The discrete yet structural kind of difference evoked by Deleuze and Appadurai relates in many ways to the kind of difference stemming from the standard landscape of the motorway. The motorway thus constructs itself through an extensive process of standardisation. This process is one of repetition. As such, it is usually associated with notions of sameness and homogeneity. But it is also, in my sense, a dynamic act of reproduction, of expansion, and creation.

In order to understand how an act of repetition can create differences, we need to view it as a singular process, a process that produces a specific set of signs or ob-

jects that transform themselves through their own repetition. For Deleuze, the notion of repetition should be dissociated from that of generality, of resemblance, or equivalence. Repetition, he says, is a necessary conduct that involves singularities that cannot be replaced. Generality, on the contrary, expresses a point of view according to which one term may be exchanged or substituted for another (12). According to him, to repeat is to behave in a certain manner, in relation to something unique or singular, which has no equal or equivalent. Reflections, echoes and doubles, for instance, involve processes of repetition, but do not belong to the domain of resemblance. To illustrate the creative potential of repetition, Deleuze takes the example of festivals. Festivals are cultural events that repeat themselves from year to year. Repetition is their essence. They exist only because they inscribe themselves in a series of repeated events. Yet, they carry the paradox of repeating the unrepeatable. Each session involves new artists, new bands, and new themes. It does not add a second and a third time to the first, but carries the first time to the “*n*th” power. Hence, the repetition of the first session constitutes a singular series of sessions, which are all different from one another, and perpetuate the singularity from which they originate. What distinguishes a festival from a banal habit lies in its singularity – the singularity of its starting point, which defines the originality of the series it engenders. A festival can thus be regarded as a dynamic and creative form of repetition. Like the motorway, it generates series of objects, animated by the same and unique idea, but all different in form. It creates a form of iteration, of non-identical repetition implying the progressive differentiation of a singular object over time.

Artists have long exploited the creative potential of repetition. Markus Bandur (2001) explains in his book “Aesthetics of Total Serialism” that in the 1950s serial music understood seriality as an alternative to avoid banal forms of repetition. Serialism, he says, is a method liberated from stylistic compulsions, and capable of avoiding repetition in the act of creation. It is a method playing on numerical permutations and arrangements in order to avoid monotony. It implies a quasi-mathematical approach emphasising the relationship between effects of similarity and individuality, between differences and repetitions emerging simultaneously from a given series. The creative potential of standards and repetition are particularly present in the work of Pierre Boulez, one of the main figures of serial music. His work is thus marked by the sought of a standard form of language, a synthetic and minimal language that would abolish the necessary use of hierarchical forms of compositions emphasising human feelings and emotions. For him, the term serial designates a method that consists in arranging pitches, lengths, dynamics, attacks and sounds in the form of series. His search for a purer and more standard musi-

cal language is accompanied by a constant attempt to overcome the limitations of fixed structures. In his compositions, he uses aleatoric musical forms to bring out the utmost intensity and variety. Some of them are conceived with a fixed beginning and ending, and a number of ways between these two points. Other compositions have no starting and ending points, leaving the decision of where to start and where to end to the performer (see Boulez's unfinished *Sonate pour Piano* Nr. 3, 1955–57). A piece of music becomes then a never-ending soundscape where listeners can enter and leave the stream of musical information whenever they want. In order to understand such musical meaning, it is no longer necessary to know what has gone before and what is coming next. Every time-period, every moment in the current of musical flow is similarly meaningful and rich in information. The use of evolving repetitions in serial music draws our attention away from the strict identity of objects, and redirects it towards multiplicities and differences within repetition. It shows that series and standards can act as creative means, ensuring the continuous variation of the musical flow.

In the field of architecture, we also find a number of approaches that draw on the creative potential of repetition as a way to integrate the possible and unpredictable evolution of projects in time. Architects such as Greg Lynn, Bernard Cache or Peter Eisenman experiment today with dynamic processes of form generation, often playing on the random distribution of elements in space, and their transformation over time. Their projects are thus conceived as the frozen moments of a temporal sequence. They are based on quasi-organic periods that have their moment of growth and evolution, and carry the process of their own transformation in time. These architectural practices draw, in my sense, our attention away from the strict identity of objects, and redirect it towards multiplicities and differences within repetition. Andrew Benjamin (1998) thus links the notion of repetition to the capacity of projects to envisage the incomplete, and the yet-to-be. He asserts that architecture itself is repetition, and that the new is always conditioned by that which has already taken place. Hence, invention occurs within the prevailing structure of repetition. Contemporary architecture, like serial music, therefore turns repetition into an act opening creation to the new and the unpredicted. The core question in these artistic approaches, we could say, always concerns the type of repetition that is being staged.

Following this perspective, we can view the repetition of signs and objects inherent to the process of standardisation as a dynamic and creative act. The subtle variations of shape and colour that characterise the aesthetic of the motorway as it crosses countries and regions becomes similar to a musical composition, a never-ending stream of signs and information that car drivers can enter or leave whenever they want. The process of standardisation thus repeats signs and objects, but trans-

forms them gradually throughout their repetition. It repeats the unrepeatable, and generates a form of creativity that turns the banal landscape of the motorway into a serial and fluctuating composition.

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Does the global logic of flows create inequalities, or does it erase all forms of distinction and singularity among places? Does it multiply, or does it dismantle differences? In this chapter, we have seen that both sides of the coin of global processes are products of an infinitely varied mutual contest of sameness and difference. We have thus investigated two theoretical models explicating respectively the notion of sameness and the notion of difference. The core-periphery model stresses the increasing presence of left-over space on every scale, and raises the emergence of a residual condition, which constitutes the fatal counterpart of global flows. It shows that the logic of flows necessarily involves a process of differentiation. The thermodynamic model, by contrast, shows that the natural movement of flows tends to attenuate differences. Flows are always conditioned by the presence of pre-existing differences, such as cheap and expensive markets, but they tend to cancel them out. From the combination of these two models, we can see that the homogenisation of culture and the standardisation of urban spaces are, in fact, concomitant with growing spatial inequalities between connected and disconnected areas. In this mutual relation of sameness and difference, the physical differences that occur between flows and leftovers, between connected and disconnected space, or tame zones and wild zones, remain superficial. The ever-faster recycling of space allows residual areas to be periodically saved from decay, while former spaces of flows become suddenly obsolete.

Fundamental differences, I argue, do not lie in the uneven connection of places, but in the tensions that stem from the disjunctive nature of flows. They stem from the asymmetrical and varied nature of flows. Viewed from this perspective, the residual condition raised by the core-periphery model constitutes an illusory expression of these deep tensions. The vast amount of leftover spaces the motorway creates along its margins thus reveals a profound and structural rupture between flows pursuing contradictory trajectories and purposes. They reveal deep tensions stemming from the impossible encounter of slow urban flows and fast movements of cars. Both flows tend to intersect each other but their incompatible speeds end up creating empty spaces and no-man's lands. Centres and peripheries, flows and residual spaces, do not constitute therefore fundamental differences. They interact visibly at the surface of global geographies, but reflect the presence of much deeper tensions occurring through the disjunctive relation of flows to one another. These tensions demonstrate that the logic of flows constructs a geography that is far too complex to be understood in terms of existing centre-periphery models, or be reduced to a simple

opposition between what is connected and what is disconnected. It unfolds as a vast, overlapping and disjunctive order that entails the construction of an ever-changing landscape, where tensions and differences emanate from the overlapping of multiple and contradictory mechanisms. Moreover, we have seen that among these mechanisms, standardisation accommodates the creation of sameness and difference. The repetition involved in the process of standardisation can thus be regarded as a creative act, an act that creates differences as much as recurrences.

So far, we have taken the notion of difference as a central and positive term of all dialectics dealing with flows and globalisation. We have considered local differences, identities, and singularities as pre-existing qualities of places, which should eventually be preserved. By contrast, standardisation, sameness, and homogeneity were seen as undesirable effects of the global logic of flows. The creative potential of the standardisation raised in this chapter reverses this dual equation. Standardisation appears as a fundamental process that governs some of the deepest transformations of our urban environments, and turns the repetition of self-similar signs, commodities and places along global networks into a creative movement. The bare and material repetition engendered by the process of standardisation should not be viewed therefore as an undesirable effect of globalisation, but a creative mechanism of differentiation.

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4 PART

**CREATIVE
INFRASTRUCTURES**

4.0 URBAN MEDIATORS

What is the relation between flows and cities in the new global economy? How do they interact? How do they constitute each other? The fate and position of cities in the space of flows depend largely on their infrastructure, as it governs both their role of cultural and economic engines, central to the production of flows, and their capacity to attract (or repel) global flows. Hence, cities cannot be conceived of without taking into account the network of flows within which they are positioned; neither is it possible to conceive of flows independently from the cities that produce them. The global economy creates therefore a new global context of interaction, where flows and cities become mutually defining entities.

Infrastructures play, in this mutual relation, the role of mediators as they both constitute the primary support of virtual exchanges and give rise to a vast range of public spaces. With the intensification of global flows and the diversification of exchanges, their form and meaning change radically. They are no longer heavy and long term investments, such as factories and motorways, ensuring a safe and rather predictable future. Their shape becomes discrete, diffused, and multiple. It partakes of a technological landscape that infuses large urban territories and adopts the more and more cultural substance of flows, thus acquiring a new creative character.

So far, few authors have paid a close attention to the very nature of flows. The term “flow”, as it is now used in social sciences, usually refers to the exchange of money,

capital, and information. Flows, I argue, cannot yet be reduced to a generic form of information. They encompass a diversified and cultural material, which has a determinant influence on the form and “behaviour” of the infrastructure that supports them. In order to understand the new role of infrastructures, I propose to break down the content of flows into three main categories – urban flows, technical flows, and cultural flows –, and assess each of them in relation to the infrastructure through which they are physically mediated.

The logic of flows is at the core of the urban fabric. In the “Informational City”, Castells (1989) highlights the central role of cities in the production and the processing of information flows. He also acknowledges the development of loosely inter-related exurban constellations, and the global connectedness of world cities such as New York, Tokyo, or London thus emphasising interdependence of cities (147). In Europe, for instance, rising inter-urban competition makes the interaction between cities stronger than ever. Medium-size cities draw the base of their economic and cultural development from their interaction with other similar second- or third-rank cities. Glasgow, where cultural policies have been of particular prominence in the nineties, situates itself within a whole “league table” of competitors. Amsterdam, Barcelona, Manchester or Lille are among the primary cities, not counting Duisberg, Dortmund, Liverpool. This effectively demonstrates that the logic of flows acts not only between continents but also between relatively close cities. It anchors itself in a much more diffused and local pattern than the given archetypal world cities suggest. Not only does it draw lines of intense exchanges between “smart” and over-wired cities and economic regions, it is also active at the urban scale, at the level of our physical, and phenomenal experience of cities.

Castells’ definition of cities in the space of flows remains ambivalent. For it involves both the relative weakness of localities condemned to challenge the new global economy, and the still central position of world cities asserting the domination of global flows over places. My objective, in this chapter, is to refine this definition by moving beyond the pervasive assumption that flows and cities hold a simple relation of complementarity, of containment, and polarity. I propose to raise a philosophical perspective implying their mutual, rather than merely causal relation. Flows and cities, I argue, are not distinct, but mutually defining entities, affecting their respective production and transformation. I define the interrelation of flows and cities in terms of the infrastructure they have in common, the specific infrastructure that draws the link between their respective scales of involvement. Hence, it is often difficult to distinguish the urban infrastructure from the global infrastructure. I argue that this infrastructure acts as a play of surfaces unfolding like a porous frontier – an interface between an outside and an inside, involving a disunified series of systems,

of disparate flows, energies, events, bringing together their more or less temporary alignments. My main reference, in this chapter, is Elizabeth Grosz who, in her book “Space, Time, and Perversion”, reconceptualises cities and architecture through the work of Gilles Deleuze (Grosz 1995, 104). Deleuze, she says, is the thinker of movement, of difference, the cartographer of flows and forces rather than forms. His work can serve as a point mobilisation to destabilise and rethink cities and architecture in relation to flows. I shall then add to this dual relation the notion of infrastructure, a third entity that plays the role of mediator between urban and global flows.

In the first part of this chapter, I outline a series of models characterising the influence of flows on cities through specific kinds of infrastructures, each engaging a radically diverging scenario. The first scenario announces the rise of a mediatic and virtual infrastructure, entailing the total disappearance of the city. The second views the city through its cultural and historical infrastructure, and reflects the aesthetic dominance of economic and financial powers on centres. The third one considers the relation between flows and cities through generic infrastructures, and proclaims the emergence of a new ubiquitous urban condition taking shape on a global scale. The second part of this chapter raises the possibility for a fourth scenario involving the predominant role of flows in the transformation of the city, without yet denying the persistence of its physical reality, or falling in a purely symbolic vision of urban space. This scenario stresses the transitory, yet active function of cities in the space of flows. Cities are zones of transfer relating to the many networks that intersect their physical structure. The movements of commodities and information transiting through airports and underground networks of exchange constitute the lifeblood of their urban activity. The infrastructure appears as a series of economic devices facilitating exchanges, and ensuring the smoothness and porosity of the urban condition. Following Elizabeth Grosz, I thus define the city as an economy, a complex process of transfer, distribution and exchange. In the last part, I define the relation between flows and cities as an interaction between an inside and an outside. The infrastructure supporting flows constructs a global topography that weaves between the virtual and space of economies, and the actual space of cities. It creates an external surface surrounding and enveloping cities. Urban space develops inside the many folds and contortions of this weaving surface. The externality of flows does not then counter the interiority of cities. It constitutes a loose and virtual envelope permitting the actualisation of urban space.

THREE SCENARIOS

The development of communication technologies, in recent years, has lead to many pessimistic scenarios involving notably the irrevocable disappearance of the city. Hence,

there has been tendency to believe that the intensification of long-distance interaction would cause the virtual disappearance of the urban body and the replacement of its geographical space by the screen interface. In his paper on “The Overexposed City”, Paul Virilio (1986) declares the implosion of urban space into instantaneous time and speed:

On the terminal’s screen, a span of time becomes both the surface and the support of inspiration; time literally... surfaces. Due to the cathode-ray tube’s imperceptible substance, the dimensions of space become inseparable from their speed of transmission. Unity of place without the unity of time makes the city disappear into the heterogeneity of advanced technology’s temporal regime. (19)

Virilio announces here the fatal liquefaction of the urban body, thus echoing Zygmunt Bauman’s (2000) concept of “Liquid Modernity”. Bauman develops a metaphor of the liquid arguing that social networks are disintegrating in favour of new techniques of power. Progress and performance, he says, are now achieved through the smallest and lightest elements possible. Society develops through the disintegration of its elementary components, which unlike solids tend to be in perpetual movement, to spread over and take the shape of the recipient in which there are placed, without yet keeping that shape. In this metaphor of liquidity, the development of communication entails the dissolution of the city’s fabric, of its materiality, shape and distance, into pure time and surface. The relation between flows and cities becomes one of concurrence. While flows grow stronger and impose their virtual dimension over urban space, they substitute themselves to the solid and social matter that once composed the urban body. Cities dissolve into flows; their limits implode to become that of the computer screen and the wire-cable. Following the same pessimistic vein, Michael Sorkin argues that the physical arrangement of the city has now become more televisual than spatial (Sorkin 1995, 54). Like television, the contemporary city has become ageographical. Its form is not confined to place or site; it takes form as telematic effluvium, connecting neighbourhood to neighbourhood, quarter to quarter, city to city, fabricating, as it goes, an immaterial urban skein, which is best approximated by televisual flow. In Sorkin’s view, televisual flow not only make the boundaries and coordinates of the contemporary city more fluid, they also deprive it from its spatiality. This first scenario involves the replacement of cities by virtual infrastructures, whether computational, or televisual. It is marked by an evident technological determinism, defining cities in opposition to flows, and turning their relation into a fatal rivalry leading to ultimate precedence of flows over cities. The mutual re-

lation between flows and cities is thus reduced to a simplistic antagonism depriving the city from its physical reality.

A second scenario consists in viewing the city as a symbolic reflection of economic flows. Flows, in this scenario, are conceived of as pre-dating the city. They are the cause and condition that govern and motivate its design and development. Like many socio-economical perspectives, this view stresses the symbolic influence of global economies on cities. It defines urban space as a representation of capitalist forces, and buildings as punctual expressions of the few dominant actors of the new global economy. Flows are similar to an economic and symbolic matter that solidifies into urban and aesthetic matter. Their cultural and media content translates into signs, shapes and materials, signifying the indisputable presence of dominant economic actors in the city. Banks, towers and business centres become the visible expressions of flows, the symbols of a city increasingly dominated by transnational corporations and large financial groups. If this second scenario asserts the undeniable influence of economic forces on cities, as much as their more and more cultural and aesthetic content, it remains on a very symbolic level, which fails in my sense to grasp the physical and peripheral mutations that characterise the contemporary city.

More recently, we have heard a third scenario suggesting an inversion of the presumably causal relation between flows and cities. Cities are not the product, or the representation of flows, but the site of their production. They are the very engines of global flows. They participate of a new urban condition, an uncontrollable wave of urbanisation developing on a global scale, indifferently to sites and places. This scenario bases itself on recent urban phenomena marked by a demographic explosion and the rapid urbanisation of regions that had long been considered secondary, or undeveloped, notably in south-east Asia, and Africa. It stresses the actual transformation of the city into an amorphous and chaotic landscape, resulting in the alienation of many urban populations, whether commuters, travellers, or businessmen. The presumed precedence of this global condition, denying all kinds of historical and geographical specificities, underlies much of Koolhaas' *Generic City* (1995). It raises the idea of an ubiquitous city, replicating airports, central business districts and urban peripheries on a world-wide scale, and questioning our cohesive understanding of the presumably western, historical, and well-ordered city. It defines a global and chaotic urban condition frantic to be linked to and part of the network of flows, a city depleted, abandoned, and derelict insofar as it is cast outside global nets.

These three scenarios stigmatise the actual debates concerning the position of cities within the new global economy, and provide a possible starting point for a more pro-

found reflection on the mutual relation between flows and cities. They do not resume the entirety of the question around flows and cities. For, they have, in my opinion, the same problem: they relate flows and cities by subordinating one to the other. Either the city dissolves through the virtual and amorphous space of global networks, or it becomes a unique and all dominant condition covering indifferently every sites of the globe. We also find today intermediary positions, expressed by authors such as André Corboz (2000), or Bernado Secchi (2004), who concentrate on the increasingly diffused structure of cities, while suggesting quite optimistic visions. Corboz, for instance, proposes the concept of “hyperville”, explaining that a country like Switzerland has today become a single city, indifferently absorbing city centres, peripheries and countryside. In these more moderate views, the point of reference remains yet, the historical city, an entity that is seen as having grown to the size of a region or a country. The predominance of flows becomes then secondary, for it only appears as consequence, or a singular aspect of the territorial expansion of cities.

Can we now imagine a new scenario where flows and cities do not play against each other? Can we think of a scenario that gives flows an active role in the construction and transformation of the urban sphere, without denying the predominance of cities in the global geography of flows, or falling in a relation that is either causal, representational, or fatalistic?

CITIES AS TRAFFIC

In order to conceive of the mutual construction of flows and cities one needs to see cities as zones of transfer and transition, as correlates of the multiple networks that intersect their physical structure and fuel their urban activity. We can thus view the city as an active zone of transit enabling the circulation of cultural and economic flows on a global scale, and which, just like an airport, develops as a flat surface of transit perpetually crossed by flows. Wim Nijenhuis argues, in this respect, that the city was, from the first appearance of the Greek City State, a product of the flow of traffic. For him, the city was never a stable, grounded site of place, but only a “qualifying difference in traffic”, a point of converging flows (Nijenhuis 1995, 54). Likewise, Elizabeth Grosz (1995) emphasises the transitory function of cities, which she opposes to the solidity of the state. When the state functions to grid and organise, to hierarchise and coordinate flows and activities, cities function as chaotic, deregulated zones of transition, crossed and activated by flows. Hence, for her, the movements of commodities and information, as much as the movements of illicit drugs running through underground networks are some of the numerous trails that define the city as a surface of transfer. The city can be conceived of as:

a complex and interactive network that links together, often in an unintegrated and ad hoc way, a number of disparate social activities, processes, relations, with a number of architectural, geographical, civic, and public relations. The city brings together economic flows, and power networks, forms of management and political organization, interpersonal, familial, and extra-familial social relations, and the aesthetic/economic organization of space and place to create a semi-permanent but ever-changing built environment or milieu. (105)

Grosz defines here the city in a very economic sense, as she puts forward the instability of its internal relations, but also its capacity to connect numerous processes and activities. It is significant that she does not use the term “economy”, in the strict financial, or commercial sense. The word economy thus is derived from the Greek term, *oikos*, meaning home or house. For Grosz, an economy is the distribution of material goods, either cultural, social, economic or representational. It designates the movements that operate in a system of production, circulation, and consumption. The urban economy consists therefore in the distribution, not only of asphalt, bricks, concrete, steel, and glass, but also in the production and circulation of people, discourses, ideas and writings, including all the plans, treatises, and urban rules that surround and infuse buildings. From this definition, the transitory condition of cities emerges as a correlate of the new global economy, fuelling the city’s own internal economy, renewing and redefining the urban body from its own integrated traffics of goods, ideas and people.

CITIES FROM THE OUTSIDE

Grosz’s economic view of the city evokes an incomplete body which always redefines itself from the inside. She thus describes the city as an economy which is essentially internal. But we could also argue that the economic and transitory character of the city comes from the outside, from its fundamental relations to global networks and other cities. Like Michael Speaks, in his article “Artificial Modernism in the Space of Flows”, we could say that “it is the fluidity capital of currencies and information, including the chaotic flow of bodies through the transnational paths of highways, railways, marine and air terminals, that defines the contemporary city” (54). In their essay “City/States”, Deleuze and Guattari (1986) also emphasise the city’s intrinsic dependence on the outside. They put the accent on the city’s origin and reliance on external networks:

The town is the correlate of the road. The town exists only as function of circulation and of circuits; it is a singular point in the circuits which create it. It is de-

fined by entries and exits; something must enter it and exit from it. It imposes a frequency. It effects a polarisation of matter; inert, living, or human – it is a phenomenon of transconsistency, a network because it is fundamentally in contact with other towns... (195)

Deleuze and Guattari confirm here the economic character of the city, but in a sense that slightly differs from Grosz's internal, and almost corporeal economy. The urban economy they describe proceeds of a transfer, and distribution devoid of interiority. It is a process of exchange turned towards the outside. The outside is actually a recurrent question in Deleuze's work. In his book on Foucault, he describes concepts as complex assemblages, as events or advents (Deleuze 1986). For him, concepts are the consequence of an encounter. They emerge from a confrontation with the outside, and it is this confrontation with the outside that forces us to think, and position ourselves. From this definition, we can consider that cities are similar to concepts. They are the consequence of a confrontation with an outside constituted by flows. Flows are global; they dissembled social events and relations from their local settings; and they involve the deterritorialisation of many generic buildings and corporate districts. They thus represent the external condition cities inevitably encounter as they challenge global economies.

Flows do not yet oppose themselves to the notion of context; they redefine it. They form a new global context, which is constituted by multiple locales interacting with each other. They construct an outside that surrounds and envelops cities, that confronts them with their new global condition, and forces them to interact within the strategic geography of the space of flows. Flows thus constitute a context which is not limited to the conventional scale of districts and neighbourhoods, but defined as a new zone of interaction, an outside that requires cities to open themselves and construct themselves as exogenous conditions.

THE INFRASTRUCTURAL FRONTIER

My argument here is that in order to understand the mutual adjustment of flows and cities, we need to take into consideration a new zone of transition, a new interface taking shape between the internal space of cities and the external space of flows. This interface is constituted by an infrastructure that acts as a porous frontier. It must not be regarded as a limit to be transgressed, or an impermeable boundary separating the city from its outside, but as a zone of contact and encounter. It is produced and set in a process of passage. It does not so much define entries, exits and routes of passage; it is itself a moving boundary creating folds and interstices. This new bound-

ary is more porous and less fixed and rigid than is commonly understood, for there is always a mutual infection by one side of the border of the other; there is always a becoming otherwise of each of the terms thus bounded. Flows and cities can therefore be apprehended through a third infrastructural entity, a loose and porous frontier that allows flows and cities to overlap and play against each other in ways that yield their reconnection and their realignment.

As we introduce the infrastructure as a third entity, we tend to abandon the binary relation between flows and cities, and imagine a new zone where flows and cities act as the two sides of the same porous surface forming itself through a series of folds and contortions. In this new relation cities are neither the victims, nor the challengers of the global logic of flows. Socio-economic theories often stress and dramatise the weakness of cities in face of the global networks. They suggest that global economies have definitely deprived cities from their internal forces, from their inside, their meaning, their specificity, and their identity. Deleuze's comprehension of the outside inverts this equation. Cities appear as an effect of the external surface created by flows, an effect of the various movements and folds that shape the global infrastructure supporting flows. Cities are not something other than the outside, but the inside of an outside created by the contortions of the global infrastructure of flows.

In this chapter, I have tried to define the intricate relation that global economies establish between flows and cities. We have seen that the notion of flow is not antithetical to that of city. Contrarily to many pessimistic scenarios suggesting the city's virtual disappearance, cities adopt an active "behaviour", both in terms of their internal economy and their intense interaction with other cities. This active behaviour provides the hint from which we can introduce the infrastructure as a third entity that governs the mutual construction of flows and cities. The Deleuzian perspective introduced here confirms and extends this hypothesis. It reasserts the transitory, yet active role of cities, in relation to a virtual outside created by flows. It suggests a model based on the capacity of flows and cities to define and establish each other through a porous frontier. This model is philosophical as much as it is practical, for it suggests that buildings, infrastructures, and urban spaces, like concepts, do things, perform actions, create connections, and bring about new alignments. Cities become events, and infrastructures the primary devices of connection to global flows. Both can be comprehended as modes of effectivity and action, producing unexpected intensities and new connections, without losing their materiality.

The notion of outside becomes central to the understanding of the mutual relation between flows and cities. As they bend and overlap each other, flows provide cities

with an outside. They create a folded surface, a new form of interiority, reflecting the solidification of flows into built matter, their becoming real and apprehensible. The infrastructure emerges from this realisation of global flows. It can thus be comprehended as an actualisation of the virtual space of flows, this new interface which Sassen (1999) defines as a topography weaving between the virtual space of global economies and the actual space of cities. As it takes the shape of transportation networks, highly standardised environments and a multitude of transitory spaces, it forces to think cities in terms of surfaces, of curves and contortions. It raises a form of urbanity, which is similar to the interior flows create as they overlap each other, and run across the city's numerous spaces of transit.

Moreover, the notion of interface helps to redefine the infrastructure as a connector rather than an obstacle, or separator. In many cities, lines of infrastructures, such as motorways or railway lines, tend to create residual conditions, wherein parts of the city, districts, or waterfronts, are disconnected and marginalised. Such situations are typical of small or medium-size cities whose urban mass does not suffice to absorb the large-scale infrastructures that serve to connect them on a regional, national, or transnational level. They often result from a functional approach to the infrastructure, which tends to separate functions of transit from functions of living, thus perpetuating a certain modern idea that activities need to remain separated from each other. Regarding the infrastructure as an interface helps to move beyond the simplistic distinction of movement and activity. It calls for a more complex association of flows and urban matter, a form of heterogeneity that disrupt the usually systematic and univocal character of spaces of transit. It calls for an approach of design that focuses more on the relations between objects, than on the objects themselves.

We should note that networks of infrastructure have not always been conceived of as isolated mono-functional spaces. Transatlantic ocean liners were conceived of as floating palaces, with casinos, restaurants, cafés and swimming pools. At the beginning of the 20th century, American parkways were designed specifically with a naturalistic landscaping meant to suggest an aesthetic and thematic driving experience. They were intended to be pleasant travel corridors, conceived of as scenic sequences of events, combining transport, leisure and consumption. They were places to see and be seen, to manifest one's presence in a context of social and cultural interaction. Although their physical form remains today much as originally built, they have evolved towards traffic arteries whose sole function is one of transit, thus losing the street complexity they were initially meant to perpetuate.

The intensification of flows on every scale reasserts today the living function of the infrastructure. Since, flows tend to become an intrinsic component of any designed space and object, a building becomes similar to the generic component of an

ever-changing landscape. Its meaning and function are meant to be continuously re-defined according to the successive activities it will host. What counts is not its actual shape anymore, but what it interfaces or gives access to. Its main quality becomes one of exchange, adaptability and compatibility. Likewise, the role of the infrastructure becomes one of interface. Its main quality lies in its capacity to allow diverse functions or activities to co-exist in close proximity to each other. It regains the initial multi-functional aspect of the parkway and ocean liner, in a conception that sees its role as a mediator between flows and urban space.

4.1 THE MECHANICS OF MOVEMENT

Global flows are mediated by a series of technical networks, such as the cable, motorways, or satellites, which construct together a complex and heterogeneous technological landscape. This landscape appears, at first, as a fluid and undifferentiated stratosphere where everything flows. It develops as a virtual and coherent entity that surpasses all frontiers and obstacles. But as we take a closer look, the modalities of movement prove to be nothing but fluid. Each network involved in the mediation of flows implies a series of mechanisms working both as facilitators and obstacles.

Air travel, for instance, is a very complex organisation that involves not only fast movement, but also a series of rules, restrictions, ruptures, stops and slow displacements. The many procedures that precede the boarding of a plane – the registration of the luggage, the check-in, the customs, the waiting time, the measures of emergency – are sequenced with various mechanical systems, such as lifts, x-ray scanners, escalators and sliding doors, sometimes facilitating, sometimes restraining the fluid movement of people. What is important to understand here is that each mode of transportation and communication implies its own technical devices and that each of these devices creates a specific articulation between the flows it carries and its surrounding environment. Whether they run through vast peripheries, car parks, airport lounges, atriums, or shopping arcades, whether they run horizontally or vertically, whether they involve collective spaces or individual capsules, the mechan-

ics involved in the movement of people also convey particular behaviours, sensations and experiences of the metropolis. The lift, for instance, is a machine that offers unexpected emotions. It is likely that people would meet in a lift, yet they would retain an aptitude for moving silently and anonymously in the banal promiscuity they have learned to deal with. The disagreeable feeling created by the unexpected proximity of foreign bodies in the narrow cabin of a lift can sometimes be compensated by the slight vertigo felt during the acceleration, or the impressive views offered by its glazed cabin overlooking a street or a vast atrium. On a much larger scale, flyovers, tunnels and bridges, also involve particular sensations and behaviours, intrinsically related to their technical specificity. The many devices that compose the global infrastructure of movement thus reveal an aspect of flows that has more to do with complex mechanics and physical experiences of travel, than with the smooth and fluid movement of virtual signs.

My objective, here, is to investigate the infrastructure of movement that is now forming the global and diffused technological landscape of cities. I wish to show that it mediates flows of people through a series of mechanical paths that redefine the outer limits of the contemporary metropolis. The technical devices, I argue, act as mechanics of movement that support, combine, channel, mix and separate the vital fluids of urban life, but also involve particularly artificial and subjective perception of urban space.

The first category of objects I examine in this chapter comprises tunnels, bridges and flyovers. These technical objects are urban mechanics that works as functional and artificial extensions of the infrastructure of transportation. Following Nefer-ti Xina M. Tadiar's article on the flyovers of Manila, I yet argue that their role goes beyond the strict regulation of flows. They constitute a system of representation of social order that produces new effects of subjectivity and affects the urban matrix not only spatially, but also symbolically and politically. They become a site of conflict and debate, where different systems of value and social practices intersect. The second series of mechanics I investigate consists of lifts and escalators. Both devices work as internal grafts transforming the urban structure from the inside. Paradoxically, the lift appears as a very autonomous object, disconnected from the buildings and spaces it is supposed to link and articulate. The constraints stemming from its technical logic seem to surpass every other logics, whether spatial, social or cultural, thus failing to provide the expected articulation between its own movement and the dense and vertical space it produces. Contrarily to the lift, the escalator allows smooth transitions between spaces and reintroduces a form of continuity within the fragmented landscape of shopping malls and airports. It works as an insidious means of unification creating new interior landscapes where incompatible spac-

es can be attached *ad infinitum*, without showing anything of their actual radicality. In the last part, I demonstrate that the global infrastructure of movement redefines the city as a technological landscape composed as a series of infrastructural layers, whose interconnection relies on many technical norms and objects, serving as terminals, or connectors. Urban mechanics appear then to entail more complex phenomenon than suggested by our initial mechanical analogy. The different mechanisms composing this infrastructure do not only work as functional extension of the urban matrix, but discrete thresholds ensuring the intersection and the compatibility of its many social and technical layers.

TUNNELS, BRIDGES AND FLYOVERS

Tunnels, bridges and flyovers represent the primary stage of urban mechanics. Although they are not proper mechanical systems, they can be considered as metropolitan machines meant to articulate and ensure the continuity of urban flows. They work very much like gears allowing the urban matrix to move and pursue its spatial expansion. For Trevor Boddy (1992), they represent an urban simulacrum; they develop like the artificial replication of streets and boulevards, but on a different scale. In his essay “Underground and Overhead: Building the Analogous City”, he fiercely criticises pedestrian tunnels and bridges developing in many North American downtowns.

raised pedestrian bridges connect dispersed new towers into a linked system; mazes of tunnels lead from public transit to workplace without recourse to conventional streets; people-mover transit systems glide above the scuffling passions of streetbound cities. Grafted onto the living tissue of existing downtowns, these new urban prosthetics seem benign at first, artificial arms and plastic tubes needed to maintain essential civic function. (...) They are anything but that. These pedestrian routes and their attached towers, shopping centers, food fairs, and cultural complexes provide a filtered version of the experience of cities, a simulation of urbanity. (124)

Boddy explains that downtown bridges and tunnels are an expression of suburbia within the city centre. They replicate in miniature what expressways accomplish on a regional scale. They are extensions of the same socio-political forces, the same civic ideologies. By connecting and sealing downtown networks of large monolithic corporate buildings, they also ensure the spatial network of retail spaces, corporate atriums and isolated islands of new development to remain hermetically closed to marginal

groups, thus accelerating the stratification of races and classes. Boddy's argument draws partly on the case of Montreal's vast underground system. On a key east–west linkage that runs underneath rue Sainte Catherine, a major shopping street of Montreal, a series of metro stations are connected to each other through underground arcades. They form an underground city comprising multiple stores and services. It has been estimated that over a third of all retail and office space in downtown Montreal is directly linked to the metro and the underground city. This underground network has developed to the point where much of the corporate core of downtown Montreal can now be travelled without ever venturing outside. Today, as we enter Montreal's underground city, we are taken into a maze of atriums and passages, where we quickly lose the sense of being either under or above ground level. This strange sensation corroborates Boddy's argument according to which tunnels and bridges are artificial extensions of the urban structure.

In her analysis of Manila's flyovers, Neferti Xina M. Tadiar (1993) echoes Boddy's argument as she underlines the effects of flyovers on the city's social structure and spatial experience. She explains that in order to deal with the massive congestion of traffic caused by the increasing population, the city government has implemented a new urban form taking the shape of a series of overpasses at major interchanges. The significance of flyovers, she says, goes beyond problems of traffic and congestion. They constitute a system of representation that the state uses, in conjunction with private investors, to institute a form of social order, not only regulating flows, but also producing new effects of subjectivity.

Stratification strategies are more and more a matter of channelling flows in the way that the flyovers channel traffic, lifting the middle and upper classes who drive private cars out of the congestion created by the "urban excess". Indeed, (...) the height and distance they provide render Manila an aerial sight – a space deprived of detail and content and reduced to abstract textures from which one can extract a particular kind of aesthetic pleasure. From this suspended pathway the city looks greener because the foliage of walled-in neighborhoods become visible, and the roofs of shanties look like variegated pieces of mosaic or a collage, especially because movement blurs marks of decay and makes details of the corroding urban landscape and its trash disappear into a "postmodern" spectacle... (160)

What Tadiar shows here is that flyovers bear an aesthetic function that translates the city's wish to cover the heterogeneity and fragmentation of its pronounced uneven development. In place of the trash vision of the shanty towns, they produce a space

in the image of the new transnational economy, a space that is smooth and seamless, that dissipates all stable relations to local physical grounds, and loosens ties to the specific space of Manila. Flyovers therefore tend to act both as a representation and a means of production for the transnational economy, and make manifest the metropolis' fluid and economic condition, upon which they are predicated and by which they are produced.

The image of Manila as it is realized by the performance of the flyover is as a sea of fluids separating into channelled flows of mobile particles and a stagnating lake of liquid excess. (...) Flyovers bring the upper strata into relief, detaching from the lower strata but not masking the latter, securing domination through bypasses and overpasses rather than through enclosure and censorship. The stratification of metropolitan space is, in other words, accommodating and channelling flows. (171)

Both Boddy and Tadiar emphasise the artificial character of the infrastructure of movement that compose the contemporary urban landscape. When Boddy uses terms such as "prosthetics", or "grafts", he suggests that tunnels and bridges work similarly to a series of artificial limbs plugged into a foreign body. Tadiar's flyovers appear as small mechanisms added on the urban structure in order to coordinate its various economic modes of production and social representation. These two accounts suggest therefore that tunnels, bridges and flyovers partake of a category of technical objects that work as artificial mechanics of movement, exploiting the city's natural conditions of fluidity.

ESCALATORS AND ELEVATORS

Lifts and escalators represent a further stage of urban prosthetics. They are not simple extensions of the city's road systems, like tunnels or bridges, but small mechanical objects that are inserted directly within the urban matrix. Their presence is discrete, but they involve a more elaborated form of symbiosis with the urban structure that hosts them. The elevator is a mechanism whose conception is largely subordinated to the constraints of its own technicity. It stems from a conception that concentrates on efficiency and the accomplishment of primary functions, and considers organs as autonomous fragments. Hence, the elevator operates as a mechanical adjunction which can be comprehended in terms of its exogeneity, of what it performs, what it adds, more than how it transforms the aspect of the urban body. In the construction of high-rise buildings, the elevator is an object that is so constraining,

both functionally and technically, that it often becomes a more important stake than the space that surrounds it.

In his book *“Le Plan et le Détail”*, Jean Attali (2001) interrogates the relation between the elevator and architecture through a number of themes: the mechanical movements and communication occurring within buildings, the verticality of architecture, the vertiginous height of atriums, or the feeling of promiscuity... His hypothesis is that the mechanised movement of the lift has deeply modified the conception and perception of architectural spaces. The most obvious consequence of the elevator on architecture is the increasing height of buildings, and the concomitant shift in scale of cities. Within high-rise buildings, the elevator constructs a sort of vertical corridor distributing floors, rather than rooms. It implies a movement of people, fluids and products, which is not relative to a single plan of reference, but to a series of superimposed levels. It mobilises therefore means of conception that are not only volumetric or structural, but also relative to the spatial distance implicated in its mechanical movement. It forces buildings to be thought as the evolution of a mobile mechanism within a space.

The very singular technical logic of the elevator has often lead to its own dissociation from the spaces it links and distributes. Attali argues that the elevator has often failed to combine its individual technicity with the construction of buildings, proving an extraordinary indifference to the space within which it circulates. Thus, if we look at the programmatic section of a high-rise building, we can see that the different floors become increasingly independent and isolated from each other. This is one of Koolhaas' (1994) central arguments in his Manhattan's retroactive manifesto *“Delirious New York”*. The elevator, he explains, marks an absence of articulation, both among self-contained floors, and between interior activities and the facades. But far from being a constraint, this lack of articulation allows for new architectural potentials. It frees the floors from any determinate affectation and becomes an essential asset for developing the cultural potential of the Manhattan tower (Koolhaas 105). The elevator manifests then, in its own mechanical and normative way, the disappearing articulation between flows and spaces, concomitant with the emancipation of horizontal surfaces situated above the ground.

Contrarily to the lift, the escalator is a prosthesis that involves a close relation to its surrounding environment. The space it creates along its path does not appear so much as the result of a crude multiplication of storeys and slabs, but as the result of a complex and continuous deformation of space. It thus creates a space that is expanded, not by accumulation, but distortion. When the elevator insists on the division of space, the escalator emphasises the smooth continuity of flows. In large commercial centres, for instance, the escalator increases the undifferentiation of spaces and ac-

tivities, and allows different and sometimes incompatible spaces to be attached to one another. It creates fluid transitions between levels and erases their distinction, thus refusing the pertinence of compartments and storeys. It becomes a means of unification that gives rise to new interior landscapes where liaisons occur discretely, without showing anything of their actual scale.

In his text “Junkspace”, Rem Koolhaas (2000) explains that the escalator takes part of a whole apparatus meant to expand and exploit the malleability of flows. Along with sprinklers, air conditioned and fire proof partitions, it tends to transform buildings, schools, airports or museums, into infinitely ramified spaces of flows, infused with shopping activities. It turns them into “junkspaces” unfolding in complex labyrinths of corridors, mezzanines and arcades, where customers circulate without a goal (but with determination). Reflecting on his own experience of Heathrow airport, Koolhaas argues that flows of passengers have proved their infinite malleability, and that there is no limit to the increasing complexity of transitory and commercial spaces anymore. For him, “only a pervert modernist choreography can explain the absurd detours, the complicated ups and downs, the sudden u-turns that the trajectory from the check-in to the tarmac usually contains” (750). As the spatial configuration of the airport changes permanently, it involves a multiplication of possible paths, which makes each trajectory unique and erratic. In this chaotic context, escalators do not work as efficient means of movement, like lifts do, but strategic and commercial instruments that emphasise the complex and uncontrollable nature of flows. Their function is to create a systematic regime of disorientation and confusion. Whereas the lift suppresses all needs of articulation between spaces and activities, the escalator reintroduces complex mechanisms of transition in the fragmentation proper to the space of the contemporary city, thus favouring its chaotic development.

THE MEZZANINE

The escalator involves a very particular phenomenology of space. In a paper entitled “A Plea for Euclid”, Bernard Cache (1999) explains that the escalator can create new topological experiences of spaces. His argument stems from a personal sensation he experienced entering the Pompidou Centre in Paris:

One would enter through the main entrance (...) and, in so doing, not pass directly into the inside but into a situation where one remains in a kind of exterior space that is already in the interior of the building. This situation arises from a series of conditions, such as the vastness of the hall, the stains of rain-

water on the grey carpet, and streams of people in coats heading chaotically to escalators where, strangely enough, one finds oneself in an inverse situation. The escalators obviously take people back to the outside, suspending them in the air while they contemplate the Parisian skyline, but in the meantime, even if one is again confronted by the weather, the escalators are more inside than the main hall is. The narrow dimension of the tube, its circular section, and the stillness of the people standing on the mechanical steps and starting to take off their coats, contribute to create a kind of cosy atmosphere that can even be oppressive. It is only when one enters the rooms of the museum or of the library that one really feels inside, freed from this tension between interior and exterior. One comes from the outside and enters an external interior and then proceeds into an internal exterior before getting finally getting inside. This spatial experience has the topological structure of a Klein bottle. (54)

Cache evokes here a space which is largely governed by the continuous and topological geometry created by the escalator. In his description, the technical norm of the escalator, unlike that of the elevator, escapes the trap of technological determinism. Its technical constraints turn into the means of a unique experience.

Used repetitively, the escalator entails another form of experience. In his novel "The Mezzanine", Nicholson Baker (1989) shows that the banal, yet repeated, experience of an escalator can become a source of reflection and inspiration. He draws a curious analogy between the escalator his main character takes on his way to work and the footnotes of his own text. His character is employed by a large corporation, where he repeatedly takes an escalator to reach the mezzanine of his office. Punctuating the narration of his quotidian walk, the escalator becomes the source of many ordinary digressive thoughts: "why does the rubber handrail go faster than the steps? If one point situated on the handrail gains three steps over a point situated on the steps on every single trip, how many times do they meet each other in a day?" (75). Parallel to the description of the escalator, comes a comment of Baker on his own digressions and (extensive) use of footnotes. For him, footnotes reinforce the joy of reading. They force the reader to decide whether they are worth reading, whether he/she wants to read them in the context, or before, like "*hors d'oeuvres*". Footnotes work like switching points, sometimes directing thoughts towards abandoned or submerged stations, and leaching tunnels. They are digressions that engage the eye in a vertical movement, parallel to but distanced from the escalation of the argument. The re-positions and auto-disapprobations that surround the footnotes are potential sources of confusions, but also continuities that allow paragraphs to sprawl

faster towards a larger reality. Through this parallel, Baker means that the escalator plays the same role in the banal environment surrounding his character as footnotes in his texts. He suggests that it creates a creative interaction between its specific mechanism (both architectonic and technological) and the unexpected sensations induced by our everyday experience of transitory spaces.

TECHNOLOGICAL LANDSCAPES

Lifts, escalators and flyovers are some of the technical objects that constitute, along with the numerous networks of transport and communication, the global infrastructure of movement. This global infrastructure is comparable to an urban and technical ecology. In his book *“La Ville, Territoire des Cyborgs”*, Antoine Picon (2000) stresses the role of technologies in the mutation of the metropolis, and the transformation of people’s behaviour in face of their new technological environment. We find microprocessors and sensors at all scales, he says. Elevators, cash machines, and “intelligent” materials infuse every network of the city, such as the road, train, as well as sewage systems. Moreover, he observes that the role of technical objects is now to connect and give access to different layers of networks and infrastructures of the actual metropolis. For, he says, the main feature of this new landscape is to be organised through a series of layers of networks, ranging from the road and high-speed train systems, up to the wires and cables supporting the phone and the Internet.

In the same perspective, Tracy Metz (1991) describes in her article “The machine”, the complex and often invisible technological systems embedded in the Dutch motorway network:

The tunnels are hung with cameras and sensors which record, for example, lighting, air circulation, carbon monoxide, axle load, numbers of vehicles, speed, hold-ups in the traffic flow. If something happens, and something happens every week, the cameras zoom in, red crosses appear on the electronic boards above the tunnel entrance and the barriers are lowered. (...) The service district even has its own radio station with broadcasting permit; if a disaster occurs, instead of the disc jockey, string quartet, or ordinary traffic report on Radios 1 and 2 and the local Radio Rijnmond, you might suddenly hear the voice of the operator in the control centre ordering you to do something you were not intending to do. (5)

The technical systems she observes during the construction of the Drecht tunnel – the fibre optic cables, local computers, and radio stations – are all so precisely intercon-

nected that they tend to form a spatial continuum, crossed by flows of information bypassing all technical barriers. Each of these networks carries its own technology. They are all interconnected and superimposed over a vast territory, but never really fuse together. They recreate limits and frontiers whenever they remain inaccessible or incompatible. The points of passage between the different layers of infrastructures become then a determinant aspect of urban and territorial developments. They rely on many technical objects that play the role of connectors, or terminals. Tollbooth on motorways, train stations platforms and car park exits are some of the many spaces that are specifically meant to ensure the transition between these infrastructural layers. Technical objects and spaces are so literally absorbed by the logic of the networks they connect that it is often difficult to distinguish them from the networks themselves. Picon explains in this respect that the existence of technical objects is only relative to other objects and to the vast technological landscape in which they are embedded. Their logic can only be understood in a context that encompasses the multitude of technical networks that overlap each other.

Hence, Picon sees the influences of technologies mainly at the scale of large urban infrastructures. He stresses their effect on our perception of the city, and shows that the introduction of technologies in the urban body contributes in blurring traditional spatial categories, involving new behaviours, sometimes very different from those dictated by our intuition. Motorways and elevators are representative icons of the increasing gap between the actual movement of bodies and the phenomena of mobility. With the relative immobility of bodies in cars or in elevators, says Picon, urban flows tend to become less and less physical. The perception of time becomes more important than the perception of space. Movement becomes a matter of duration punctuated by events such as traffic jams, car crashes or metro strikes, more than effective distance. The notion of accessibility substitutes itself to that of distance; it unveils a crucial crisis in the distinction between the centre and the periphery, a number of districts situated in historical centres finding themselves in a more peripheral position than industrial zones well connected to rail and motorway systems.

The effects of this technological landscape on our perception highlight a complex and ambiguous relation between bodies and cities. The mechanisation of urban movements involves a realignment of bodies, both in their attitude and perception. It entails the mutation of ordinary inhabitants of cities into cyborgs (Picon 11). This argument draws on a deliberate analogy between the human body, which is increasingly expanded with prostheses, grafts and implants, and the urban body, which also tends to integrate artificial and mechanical extensions. Yet, the hybridity of the urban body equipped with its innumerable prostheses raises, in my sense, the limits of the corporeal analogy. The new hybrid body of the city is not an anthropomorphic body.

If the city can be compared to an organic form of organisation, it yet bears no consonance with the anthropomorphic body. It is a fractal organism within which the many mechanisms are more and more co-dependent and indistinguishable from each other. Hence, unlike medical prostheses that work individually, as the extensions of a single and well definable body, urban mechanics infiltrate and proliferate through a complex system of ramifications. They tend to be so perfectly embedded in the urban matrix that they become indiscernible from existing networks and the rest of the urban milieu within which they are embedded. Urban mechanics, therefore, do not actually fragment, or dismantle the city, but allow it to recover a certain organicity, a form of growth comparable to that of a vast, but never complete organism.

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In this chapter, we have seen that the vast apparatus of technical objects ensuring the continuity of flows through a more and more heterogeneous urban space had largely redefined what we usually understand as the urban infrastructure. Its dispersed and technological shape raises a new relation between technologies, architecture, and urban spaces. We have here focused on a limited number of objects, such as elevators, escalators, overpasses and flyovers, but there are of course many more mechanisms ensuring the articulation of urban flows. All these mechanisms construct a diffused infrastructure of movement that is so well integrated in the urban structure that both become symbiotic entities – while machines and technologies become urban, cities tend to act as complex mechanics. Moreover, they displace our conception of flows from one that assimilates global exchanges to quasi-natural phenomenon, to one that emphasises the artificiality of their articulation and the many mechanical devices that are necessary to ensure their temporary cohesion. Hence, the continuity of urban flows from one system of transportation to another is nothing but evident. The transition between the many layers of infrastructures that compose the contemporary urban landscape requires very specific mechanisms without which the different flows would not intersect each other. Places of transfer, such as multi-modal platforms connecting train and plane systems are thus multiplied, and logistics become an increasingly regarded aspect of urban policies.

Moreover, the technical infrastructure of movement becomes an integral part of the perception of buildings, as it also provides unexpected experiences and sensations. When Bernard Cache relates his walk through the escalators of the Pompidou Centre, he shows how spaces and technical objects can sometime form such perfect couples that they surpass the restricting duality between the technicality of the escalator and the spatiality of the building. The same idea rises from Nicholson Baker's narration. The escalator that leads him to the mezzanine of his office becomes an object of reflection and source of inspiration in his quotidian strolls.

The dispersed infrastructure can also be compared to a time machine, as it produces a paradoxical time which not only accelerates movement, but also introduces short intervals of immobility in the curse of the day. Urban movements are always accompanied by times of latency and wait. Mechanics of movement make speed and wait two undissociable notions. Their association is particularly striking in air travel where we sometimes spend more time waiting than actually flying. During rushing hours from home to work, when we are stuck on a metro platform or in a traffic jam, time freezes and accelerates, before taking another rhythm. The overlapping of temporalities that characterises metropolitan flows is comparable to that of the new modes of industrial production. Whereas Fordism promoted fast and linear flows, today's post-industrial modes of production favour more complex temporal schemes characterised by intense contrasts and variations, quick accelerations and deceleration, always threatened by technical failures and dysfunctions. What is new is that today's infrastructure of movement tends to integrate frozen times. The time spent waiting in elevators or airport lounges is not conceived of as an irreducible counterpart of the speed of urban flows anymore. It is also conceived of as a positive aspect of urban movement. It provides a reflexive distance which, allows us to reflect on the reasons and conditions of our movements, and on the technologies, objects and bodies that move along with us.

4.2 CULTURAL INFRASTRUCTURES

The global economy does not only involve the transfer of money, people and information. It also involves the exchange of many cultural signs and objects, such as music, film, or design. Global flows thus assume a more and more cultural content. This cultural dimension of flows implies to redefine the role of infrastructures. Not only do they serve as functional devices supporting material and immaterial movements, they also become aesthetic devices that city governments, communities, and individuals actively use, adopt and transform in order to assert their position and identity. Infrastructures thus acquire a more and more cultural and reflexive character.

In social theory, the intensification of global exchanges is mainly discussed as an economic and financial phenomenon. Authors such as Manuel Castells and Saskia Sassen mainly focus on the social and economical consequences of flows. Meanwhile, they call attention to their increasing immateriality, as the exchange of services in the new economy appears to prevail over the physical movement of goods and people. But deciphering the actual interdependence of disjointed locales and their interconnection through complex networks also implies a particular analysis of the nature of flows. In addition to the undeniable intensification of transnational exchanges, we thus have to consider the various kinds of flows at work, as well as their respective content. Some authors raise today the increasingly cultural and aesthetic substance of flows. Scott Lash and John Urry (1994), in particular, argue that the pro-

liferation of flows also involves signs and design-intensive objects, such as pop music, fashion images, and advertising. They explain that flows are now composed of “post-industrial commodities”, whether pure signs, or semantically loaded objects, whose relative immateriality is balanced with a stronger cultural component. As we start considering the cultural content of flows, the dialectical opposition between hardware and software tends to disappear. The question is not whether flows are material or immaterial, but what meaning they carry. Infrastructures in this context bear a new and enlarged role. They become a primary support of art, politics, entertainment, and aesthetics.

Flows of signs, and more particularly of cultural signs, form the category of flows, which is certainly the least discernible of all. Their content is so wide, their patterns so diffused, their media so numerous that it is difficult to differentiate them from other flows. Hence, flows of culture are often undistinguishable from flows of capital, or people. Yet, it seems worthwhile to consider them more in detail. In this chapter, I wish to show that the global logic of flows constructs a cultural space, a global mediascape marked by the aesthetic substance of flows, and the cultural purpose of infrastructures. Flows, as they are described by Castells, are programmed and repetitive sequences of exchange. They hold a very systemic character, undermined by a strong technological determinism and a rather dramatic vision of society. This character corresponds, in my sense, to a modern conception of the infrastructure, primarily conceived of as a functional, fixed, heavy and long-term investment. By concentrating on the cultural content of flows, I wish to raise the more reflexive character of infrastructures as they are meant to mediate a more diverse and ephemeral content.

In the first part of this chapter, I distinguish two actual visions of globalisation: one which is economic, and one which is cultural. If these two visions seem diametrically opposed in their perspective, they both remain true and complementary. Hence, in the new global market, the economic becomes more and more cultural, and the cultural more and more economic. I then concentrate on the cultural content of flows. Lash and Urry assert that flows are not only becoming immaterial, but also cultural. The signs and objects exchanged in the global economy involve many services related to a certain quality of life: travels, leisure, psychotherapy... The specificity of flows of signs and culture, as opposed to flows of people or capital, lies in their narrative structure, which allows them to permeate our everyday lives and to construct collective imaginary worlds. In the fifth part, I explain that the consequence of the more aesthetic substance of flows is the ever faster recycling of urban spaces. Cities are thus remade with increasing rapidity. Urban space becomes itself a commodity that people consume, embellish, or neglect when it is not up-to-date anymore. City gov-

ernments implement new policies favouring the emergence of cultural expressions. In order to attract tourists and entrepreneurs, they pay a growing attention to subcultures that enforces the identity of the places they belong to, and tend to be more creative than the already globalised forms of cultures. In the last part, I argue that the importance given to subcultures in urban policies is a sign of growing reflexivity. Places and people acquire a new awareness of their role and position within global networks. They adapt more quickly to the changing content of flows. Soft infrastructures, such as networks of small cultural industries, become in this context the privileged means of the new reflexivity of cities.

VISIONS OF GLOBALISATION

According to Fredric Jameson (1998), there are at least two different positions towards globalisation: one that affirms the relationship between globalisation and the world market as an ultimate horizon of capitalism; and one that associates globalisation with postmodernity (54). He defines globalisation as a “communicational concept, which alternatively masks and transmit cultural or economic meanings” (55). This communicational focus, he says, relates directly to the historical development of the media. From the advent of the radio, the progress of film, up to the Internet, globalisation has thus developed through the growing impact of technologies supporting signs and information. Jameson sees two possible forms of slippage from this communicational concept. In the first, technological determinism shifts towards economics. The communicational concept gets filled with visions of financial transfers and investments all over the world: “the new networks tend to swell with the commerce of some new and allegedly more flexible capitalism” (56). The concept darkens, and what comes to the fore is the rapid assimilation of national markets into a single and global space of flows, entailing the disappearance of national differences, the differentiation between north and south, and the standardisation of places and cultures. But Jameson notes that this slippage can also take a cultural turn. The communicational concept shifts towards the direction of advertisements, publicity, marketing, and the export of TV programmes. It acquires a whole cultural dimension, and information becomes endowed with a more properly cultural signification. The cultural vision of globalisation turns then into a celebration of difference where “all cultures around the world are placed in tolerant contact with each other in a kind of immense cultural pluralism which it would very difficult not to welcome” (57). But the cultural approach to globalisation does not necessarily imply a more positive vision than the economic approach. For, even though globalisation involves the mixing of cultures, it also means their unification and standardisation:

By the intermediary of the great, mostly American-based transnational or multinational corporations, a standard form of American material life, along with North American values and cultural forms, is being systematically transmitted to other cultures. Nor is this simply a matter of machinery and buildings, which increasingly make all the places of the world look alike. It is not only a matter of values either (...) but rather merely local American cultural characteristics that have been exported as practices valid for all people of the world. (64)

Jameson shows here that American economic interests and American cultural influence coincide in many instances. When American corporations export their economy, they also export of a way of life and a certain form of popular culture. It is therefore pointless to confront economic and cultural visions. These two visions are complementarily. In the process of globalisation, and particularly for what mass culture is concerned, the cultural becomes economic, and the economic becomes cultural.

FLOWS OF CULTURAL SIGNS

This evident fusion of economics and culture questions the logic of flows as we have understood it so far. It calls for a further investigation of its cultural values and forces us to reconsider the aesthetic expressions it conveys. Manuel Castells (1989), like many other authors of social theory, stresses the informational nature of flows. He indicates that the material component of the products involved in mobility tends to disappear, as it is incrementally replaced by immaterial flows of information or services. "Economies, he says, should not be defined as industrial, or post-industrial, but as informational" (136). But, by restricting himself to the idea that economies are mostly informational, he also occults the whole cultural substance of global exchanges. Lash and Urry, by contrast, stress the way in which economies of flows have been characterised by the proliferation of "post-industrial" commodities, bearing a very semiotic content:

Either they are commodities which are literally signs (such as those produced by cultural industries or advertising), or they are semiotically embedded (such as food or travel). In both cases design is crucial and long-term. (...) The services the middle-class professional may consume, physiotherapy, psychotherapy, wind surfing lessons, jazz, symphony and rock concert, exotic restaurant, exotic tourism and art museums, are all linked to a higher "quality" of life. What is important here is not so much the quality-of-life no-

tion, but the increased symbolic content of the services (...) And contra Castells it is indeed symbols and not only information that is crucial here. (221)

Lash and Urry complete here Castells' argument by affirming that the information exchanged is more and more loaded with culture. In other words, industrial flows not only become informational, but also cultural. Hence, Castells' economy is an economy of signs, within which information is the pivotal activity. But as he considers the information exchanged as strictly correlated to finance and capital, he fails to capture the symbolic content of global exchanges. For Lash and Urry, flows "should be viewed not as either informational or material, but as to varying degrees information soaked" (220). The focus should not be on a hardware/software dialectic, but on the symbolic value of the signs and goods exchanged. The question is not to know whether flows are material or immaterial, but what signs and meaning they carry.

Can we yet consider flows of cultural signs separately from other flows? When Arjun Appadurai (1993) describes cultural flows as a global mediascape, he defines them as a large and diffused database of image and narratives, in which commodities, news and politics are profoundly mixed. Hence, from his perspective cultural flows take the form of a complicated and interconnected repertoire of print, celluloid, electronic screens and billboards that blur the line between the realistic and the fictional. They offer to those who experience them scripts formed of imagined lives, and fantasies. They address directly the way people live, their tastes, their ambitions, and everything that tends to refer to their own personal culture. Following Appadurai's concept of mediascape, we can define flows of cultural signs as a particularly fluid and diffused component of the global geography of flows. The particularity of this component does not lie in its shape, but in its narrative form, and the way it infuses people's actual or imagined lifestyles. Cultural flows involving pop music, cinema, leisure, or fashion are thus often embodied in material objects bearing a very narrative and fictional structure. We can think here of novels, magazines, films, or TV commercials. Since cultural flows are embedded in a great variety of signs, objects and services, and prove to be intrinsically related to economics, and even politics, it seems difficult to define them as an autonomous category of flows. One way, in my sense, to characterise flows of culture is consider them as an aesthetic and narrative format that infuses all other flows, whether they be flows of people, technologies, finance, or ideologies.

SURFACE AESTHETICISATION

Do cultural flows have a particular effect on urban space? One consequence, in my sense, of the more and more cultural content of flows is that cities tend to pay

closer attention to their aesthetic component. This particular attention gives rise to a number of political actions encompassing the face-lift of historical centres, the renovation of emblematic buildings and districts, and the embellishment of public spaces, through colourful lighting, paved squares, and lively waterfronts. Wolfgang Welsh (1994) defines this particular effect of cultural flows as part of a global process of “aestheticisation” extending from styling, urban planning and the economy through to theory:

Aestheticisation is at its most obvious place in the urban space, where just about everything has been subjected to a face-lift over the last few years. This trend has long since affected not only city centres, but also the outskirts of towns and country refuges (...). In fact, if advanced Western societies were able to do completely as they wish, they would transform the urban, industrial and natural environment in toto into a hyper-aesthetic scenario. (2)

The aestheticisation of urban spaces stems notably from the fierce competition that opposes cities. Because they wish to attract flows of tourists and capital, cities attempt to promote their most significant and appealing qualities. In order to create a favourable business climate, urban governments support the development of leisure and consumption-based spaces, such as sports stadia, leisure parks, but also peripheral malls, headquarter towers, convention centres, and residential gentrified areas. They undertake a complete restyling of their city centres, and orchestrate ambitious urban strategies lying on a compelling collection of images, which are promoted by world-wide broadcasting campaigns.

The increasingly cultural and aesthetic ambition of urban policies often translates in an artificial form of diversity. This artificial diversity finds, in my sense, two recurring expressions. This first one lies in the postmodernist style that characterises so many cultural infrastructures. Hence, postmodernism as a style often typifies urban policies that attempt to reinforce the specific history of cities. Since it also typifies the ubiquitous and now banal architecture of banks and large headquarters, it becomes the common aesthetic denominator for finance and leisure, underlining the very romantic tendency of liberal ethics of consumption, accompanied by the usual historical nostalgia. Some cities, such as Barcelona, Rotterdam, or Glasgow, have yet succeeded in constructing contemporary images, by implementing strategies that have consisted in promoting themselves as the hip places for architecture and design. Their ambitious strategies have often resulted in very expressive flagship buildings designed by hot designers. Although these progres-

sive expressions prove that cities are now capable of avoiding the usual historical pastiche, they raise a new problem. Since all cities attempt to become cultural capitals, they simultaneously lose of their appeal. They play a zero-sum game where the artificial diversity each of them tends to promote negates itself. The logic of flows appears then as particularly challenging condition that forces cities to be increasingly creative.

DEEP-SEATED AESTHETICISATION

Wolfgang Welsh explains that in addition to this surface aestheticisation, there is also a deep-seated aestheticisation of urban space. Aesthetic, in that sense, is not meant in “the sense of beauty, but rather of virtuality and modellability” (6). It means that the urban fabric becomes more malleable, and undergoes faster recyclings. The increasingly aesthetic content of flows thus entails that urban spaces become subject to more and more rapid remodellings. Meanwhile, cities become aware of the ephemeral nature of their artificially constructed image, and open themselves to a wider range of aesthetic opportunities, often originating from their own sub-cultures. City governments thus understand that the image they are associated with is a matter of choice and that they have the possibility to recycle this image by digging for novelty in their marginal groups and districts. In Manchester’s Northern Quarter and Sheffield’s Cultural District, for instance, pop and techno music movements have provided the impetus to revitalise the city’s image. They have given rise to a series of cultural infrastructures, such as the museum of pop music designed by Nigel Coates that taint the urban landscape with a new aesthetic of collision, proper to pop and techno culture. The success of these flagship buildings remains yet very uncertain. Sheffield’s pop music museum, for instance, has rapidly suffered from a lack of attendance. The services of insolvency experts were engaged to help save the cash-strapped attraction just seven months after it opened. Other flagship buildings, such as Bilbao’s Guggenheim Museum, designed by Frank Gehry, have provided the impetus for vast urban redevelopments. Its success has been so widely acclaimed that countless cities attempt today to reiterate, for their own profit, what is now labelled as “the Bilbao effect”.

What is important here is not whether cities choose to draw their image from nostalgic movements or marginal countercultures. It is the fact that they develop a new aptitude to dig out specific aesthetics that take a very active meaning, wherein urban space acquires the ephemeral, yet exciting, value of fashionable commodities, and alternative sub-cultures, cultural producers and trend makers have chance to find new political recognition.

THE INFRASTRUCTURE AS DESIGN CONDITION

The infrastructure becomes in this context an aesthetic attribute of the urban and graphical identity of cities. It constitutes an object of design as much as it becomes the primary condition of design of cities. Hence, the increasingly aesthetic component of the infrastructure does not only imply to make motorways and bridges look better, but to make them behave as reflexive tools that affect the urban mediascape to which they belong, and emphasise the aesthetic character of urban space. This, in my sense, involves an entirely new conception of the infrastructure, which we can relate to the shift from the old Fordist infrastructure and the new post-Fordist infrastructure. We all know about the old infrastructure, the railway terminal, the hydro-electric project, and the museum on the hilltop. It involves long-term real estate investment, and large-scale visually prominent projects meant to carry the city's true and permanent identity. The new infrastructure, by contrast, is distributed, decentralised, and evolutionary. It is a factor of change that helps the city adapt its image to the variations of local sensibilities and global market forces. Bruce Mau (1999) sees the aesthetic function of the new infrastructure as one of the "background conditions" increasingly constituting the substance of his work as a graphic designer (202). The new infrastructure for him is one that is grown by users, or in response to users. It consists of agreements, alliances, and standards. It includes credit and currency exchange systems, such as master card, Visa; the global image business that allows to purchase in Jakarta a film that is processed in Toronto and projected in Zurich; as well as the immensely diversified software business. The software business thus produces a variety of micro infrastructures ranging from digital fonts that are accessible the world over, to a plethora of shareware computer programmes that independent programmers give away for free in order to gain control of the infrastructure. Viewed from the field of graphic design, the infrastructure also finds a new significance, notably due to the almost immediate processes implied by the discipline. The aesthetic value of fonts and graphics is very short-lived, and graphic designers are particularly dependent on the capacity of their local, or personal infrastructure to remain up-to-date. Also, the specificity of graphic design, as opposed to architectural or urban design is to make very little distinction between foreground and background, between the visual expressions it produces and the societal context of which it is a part. Hence, the many objects that are graphically designed, such as books, packages, movies, or flyers, are particularly embedded and representative of the volatile aspects of society. Graphic design provides here a good illustration of what the post-Fordist infrastructure is about. The infrastructure does not construct itself today through a dialectic opposing the heaviness of the physical infrastructure to the lightness of the flow. It works as a cultural commodity, both material and fugitive, unique and glo-

bally dispersed. Hence, the more infrastructures support cultural commodities, the more they adopt their ephemeral and volatile qualities.

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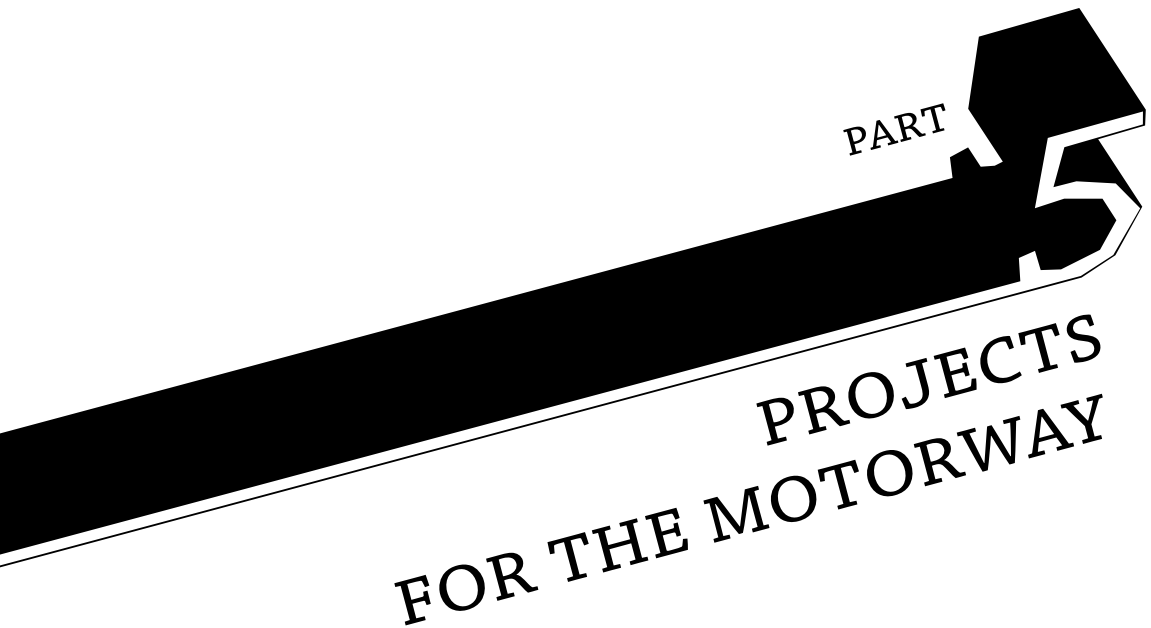
In this chapter, we have raised the increasingly cultural component of flows. This new aspect provides the global logic of flows with a much more positive character. The mediation between global flows and urban spaces becomes more open and more diversified. It occurs through the construction of a global mediascape, a sort of global repertoire of narratives encompassing a great variety of formats: CDs, TV programmes, videotapes, books... This global mediascape infuses people's lifestyles, as much as it infuses urban space. Urban space, I argue, becomes similar to a fashionable commodity that undergoes regular remodellings so as to follow the permanent evolution of tastes and fashion. The increasingly aesthetic character of urban space coincides with a more and more reflexive attitude of places regarding their own image. Aware of their creative potentials, city governments implement ambitious urban policies that attempt to reimagine the city's urban fabric so as to attract flows of tourists and entrepreneurs. In order to improve their cultural climate they also pay a closer attention to their local creative forces. They bring their marginal cultural movements to the fore and allow the alternative aesthetics of countercultures to percolate up, and infuse the city's image. This remaking of places is certainly not a new thing. What is new is the increasing rapidity through which urban space is recycled, and the sharp aesthetic reflexivity that motivates these strategies.

Flows of culture cannot, in my opinion, be considered separately from other flows, as their content is dispersed and embedded in many signs, objects, and places. However, their influence can be precisely measured by the way people and places consume them and alter their own image in return: the way that teenagers dress as their favourite pop star, as much as the way that cities tend to manufacture their image in order to attract tourists. Hence, as Welsh points out, the actual process of aestheticisation can be conceived of as specific reaction to the intensification of cultural flows, which touches all sectors: "even ecology has (...) become a further branch of enhancement" (2). It points out to a renewed interest in public space as an aesthetic vessel for politic and economic forces, and accounts for the new reflexivity of cities and places that challenge the logic of flows. The design-intensive and semiotic nature of flows becomes then a political question. It supersedes the ostensibly stable meaning of cities, and provides their material fabric with an increased sign value.

The new infrastructure acquires in this context a much more reflexive character. It does not only support flows of cars, goods, people, signs and culture. It also adapts its shape to its new aesthetic content, and becomes itself aesthetic. It becomes similar to a commodity, a piece of music or design, this quality not existing to accomplish

a particular function, but to reveal a certain attitude... to display, to show, to demonstrate, to attract and to seduce. Hence, the role of the infrastructure becomes that of an aesthetic vessel that serves the artificial image the city tends to create of itself. Moreover, since this image is subject to regular changes, the infrastructure adopts and provides urban space with the plastic and modellable qualities of fashion and design. Not only does it look like a fashionable commodity, it also behaves like it. It becomes a factor of change that owes more to the media displaying its urban image world-wide, than to its construction technique.

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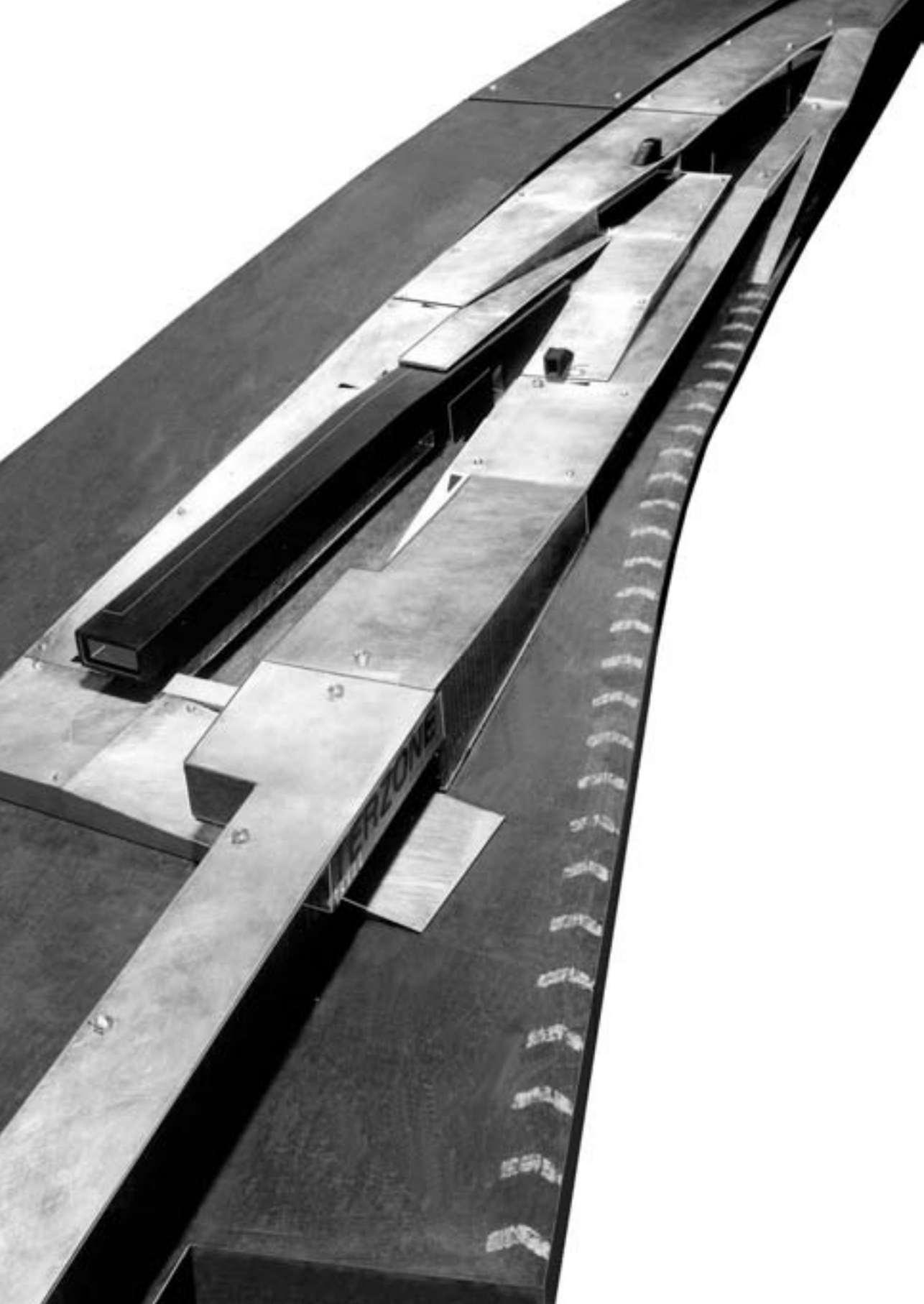


THIS final section is composed of six urban and architectural projects. The common denominator of these projects is to deal with the flow of the motorway as a programmatic material, rather than a constraint or a nuisance. They were developed as part of the research, and should not therefore be seen as conclusions or illustrations. Instead, they should be viewed, just like the video work *Statorama*, as a form of research through means that are more intuitive. They thus raise a number of issues taking their origin in very specific contexts. Some of these issues were developed in the previous parts, and are here given a more operational character.

Among them, standards and residual spaces hold a determinant place. Residual spaces situated along motorways serve as a privileged site of intervention, as they constitute a potential interface between cities and the infrastructures that run through their urban fabric. Standards are used as design tools playing on the creative potential of repetition. Hence, a number of projects take as their starting point a recurrent and idiosyncratic pattern of the site: the skyline of Villeurbanne, in France, or the open urban blocks of Akureyri in Iceland. This approach affirms the collective and distributed nature of the projects, and the role of the motorway as an active link between their different fragments.

The hybrid and mutual construction of buildings and infrastructures also appears as a recurring theme. In each project, the motorway is conceived of as an inhabited infrastructure, mixing various populations and activities. Its presence provides the impetus to imagine new programmes and new forms of interactions within its own space, but also between its transnational network and the localities it connects.

This approach calls for a customisation of infrastructures responding to local specificities. It calls for a conception that takes into account various scales and logics that could be integrated, rather than only juxtaposed: the necessity for ensuring initial functions of transit, but also the various demands of users and local governments, that can find in both new and existing infrastructures the means to express and to implement their new reflexivity regarding their specific position within global networks.



← 1:500 model of the motorway terminal. Interzone works like an urban clutch providing an articulation between the fast movement of car traffic and the slow movement of the city centre.

5.0 INTERZONE

— *Motorway terminal on the Grenoble–Geneva motorway,
France–Switzerland*

— *e2 international competition 2002*

Interzone investigates the architectural and programmatic potential of residual spaces situated between a city and a motorway cutting through its urban fabric. Equidistant from Geneva, Lyon and Grenoble, Interzone is conceived of as a fragment of the linear city that tends to connect the three cities along the A41 and the A40 motorways. The site is situated more exactly between the motorway and a zone of commercial activities next to the centre of Chambéry. This difficult position raises a series of questions concerning the relation of cities with their infrastructure. Can the motorway remain an adaptive factor of change for the city? Can the standard and physical constraints ensuring the continuous flow of the motorway be used as the prerequisites for catalysing an urban dynamic? Which spaces, which locations would allow to harness the energy created by the car flow and redirect it towards local programmes? Can we thus use the margins of the motorway to introduce new interfaces between seemingly disconnected scales, territories and people?

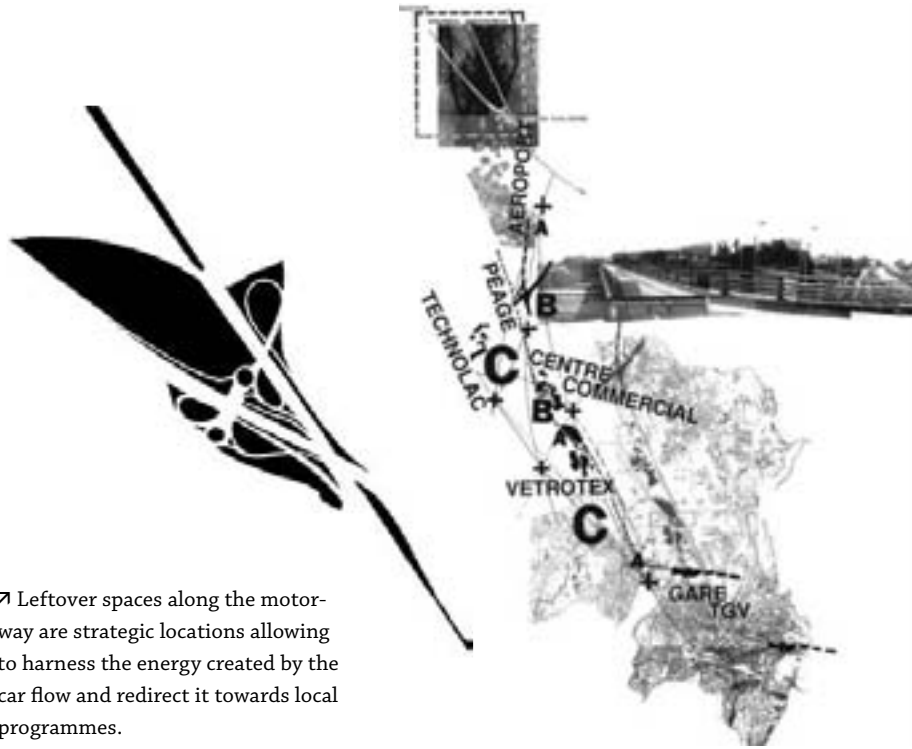
The hypothesis is that residual spaces flanking road-infrastructure are the very location where new hybrid programmes can take place. Interzone introduces a new built



↑ Aerial photograph of the site: Interzone appears as a fragment of the linear city that tends to connect the cities of Geneva, Lyon and Grenoble, through the A41 and A40 motorways.

density along the motorway that allows a more intense relation with the surrounding urban areas. Residual spaces, when filled with programmes become highly accessible zones generating an effective overlap of local and global logics. Leftover spaces and the standard vocabulary of the motorway becomes then the prerequisites that ensure the negotiation between local governments and the authorities in charge of infrastructures. It becomes a means to up-grade the peripheral environment and turn the motorway into a connector instead of an obstacle.

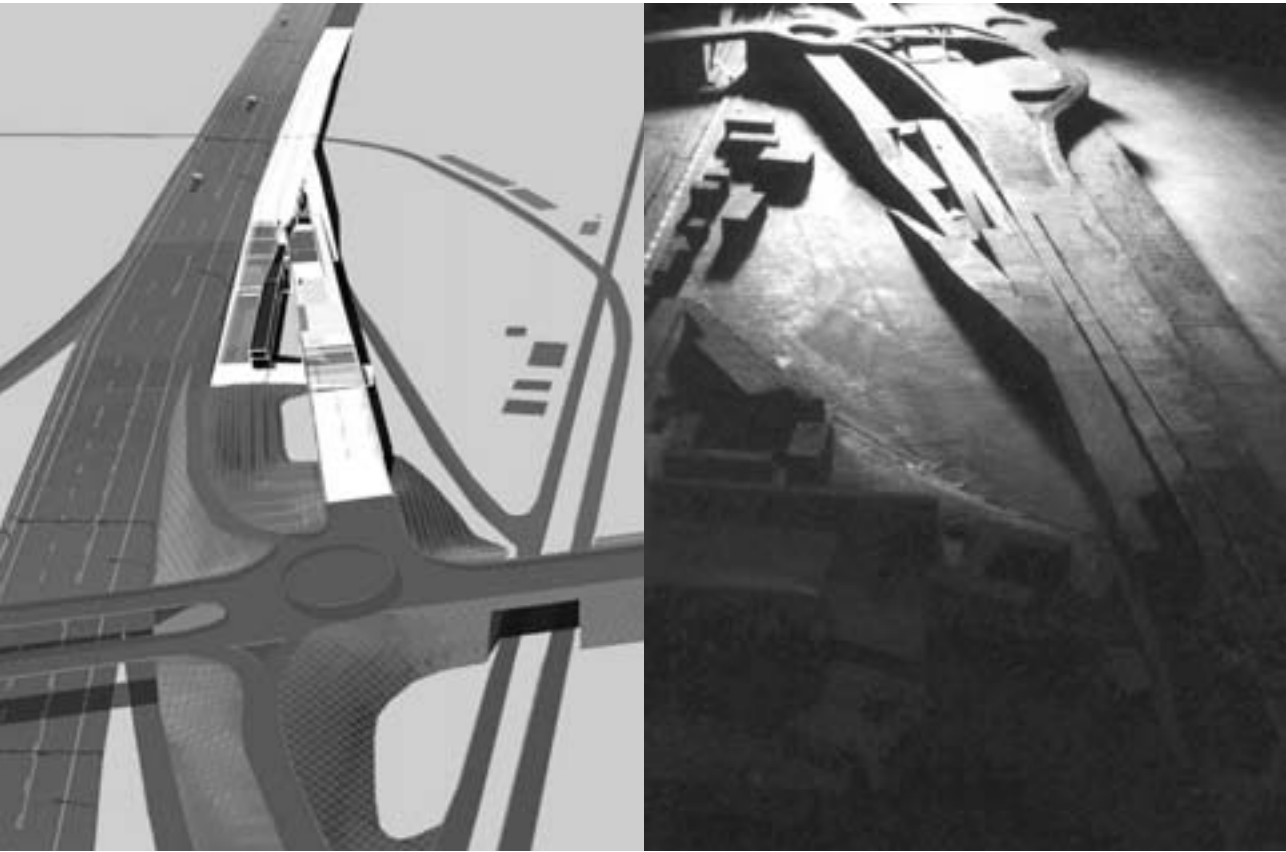
The programme of Interzone is a combination of the generic components of the motorway and specific programmes planned by the city of Chambéry. It is established



➤ Leftover spaces along the motorway are strategic locations allowing to harness the energy created by the car flow and redirect it towards local programmes.

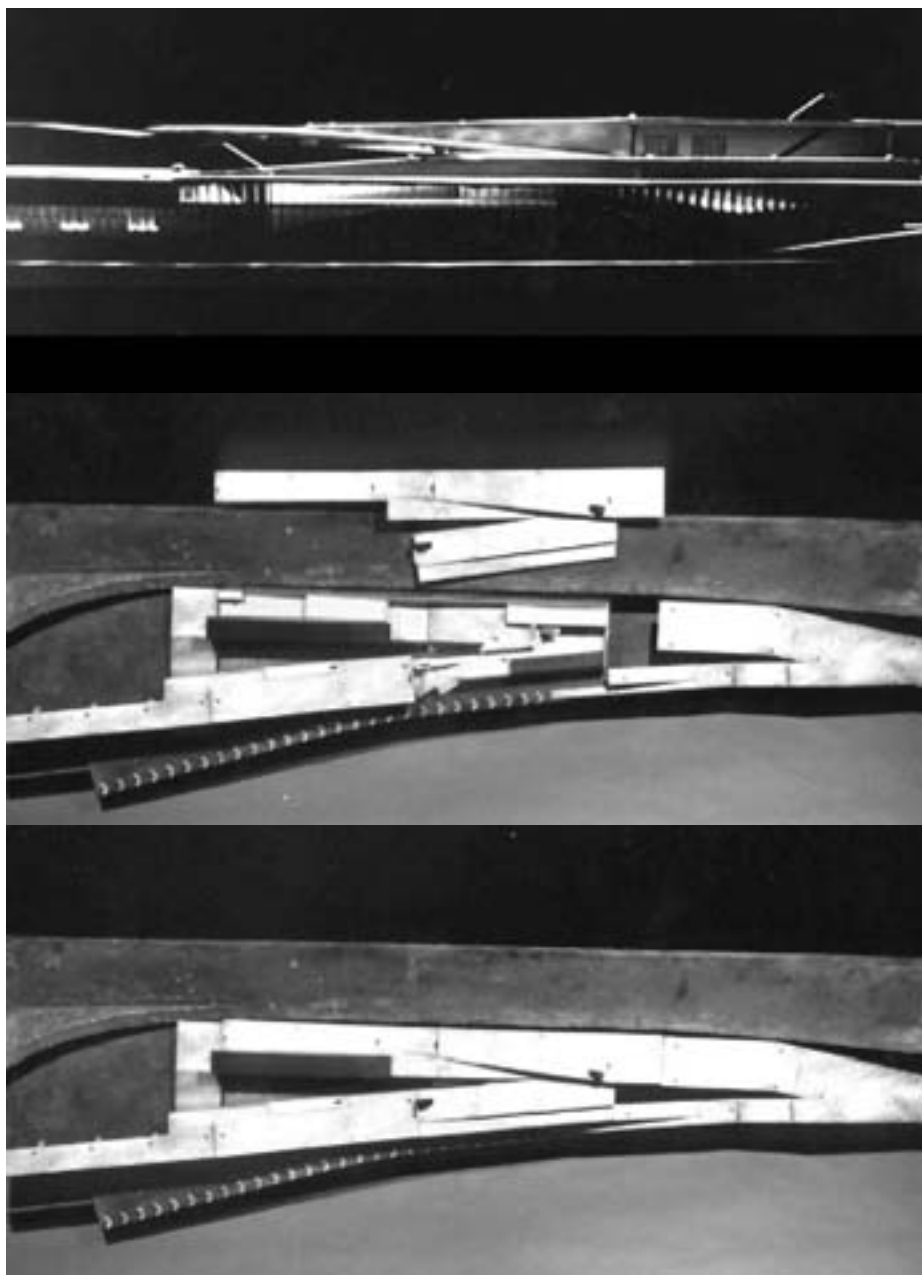
on the base of a mix of activities related to the fast transfer of people, and activities requiring a longer stay. Interzone works therefore like an urban clutch providing a possible articulation between the speed of the car flow and the slower movements of the city centre. This combination translates into a hybrid structure, halfway between the ramp of a motorway interchange and the shed of a shopping mall. It is conceived of as a megastructure capable of turning the energy created by the intense flow of cars into new local programmes. The project is conceived as a huge knot. Interwoven ramps provide all the necessary road connection, and induce at the same time a space with topological qualities, capable adapting to various and unexpected uses. The surface of the ramps is used as a car park, thus liberating the space situated underneath and in between the ramps. These empty spaces are then be filled with activities. The ramps become similar to inhabited bridges unfolding above leftover spaces. They superimpose the qualities of the motorway and those of the city.

From the perspective of a car driver, Interzone occurs as a dilatation of the motorway, as an extension of its lanes towards the most strategic points of the city: the commercial mall, the future high speed train station, and the historical centre. As car drivers reach the car parks above the inhabited ramps, they benefit from the most di-

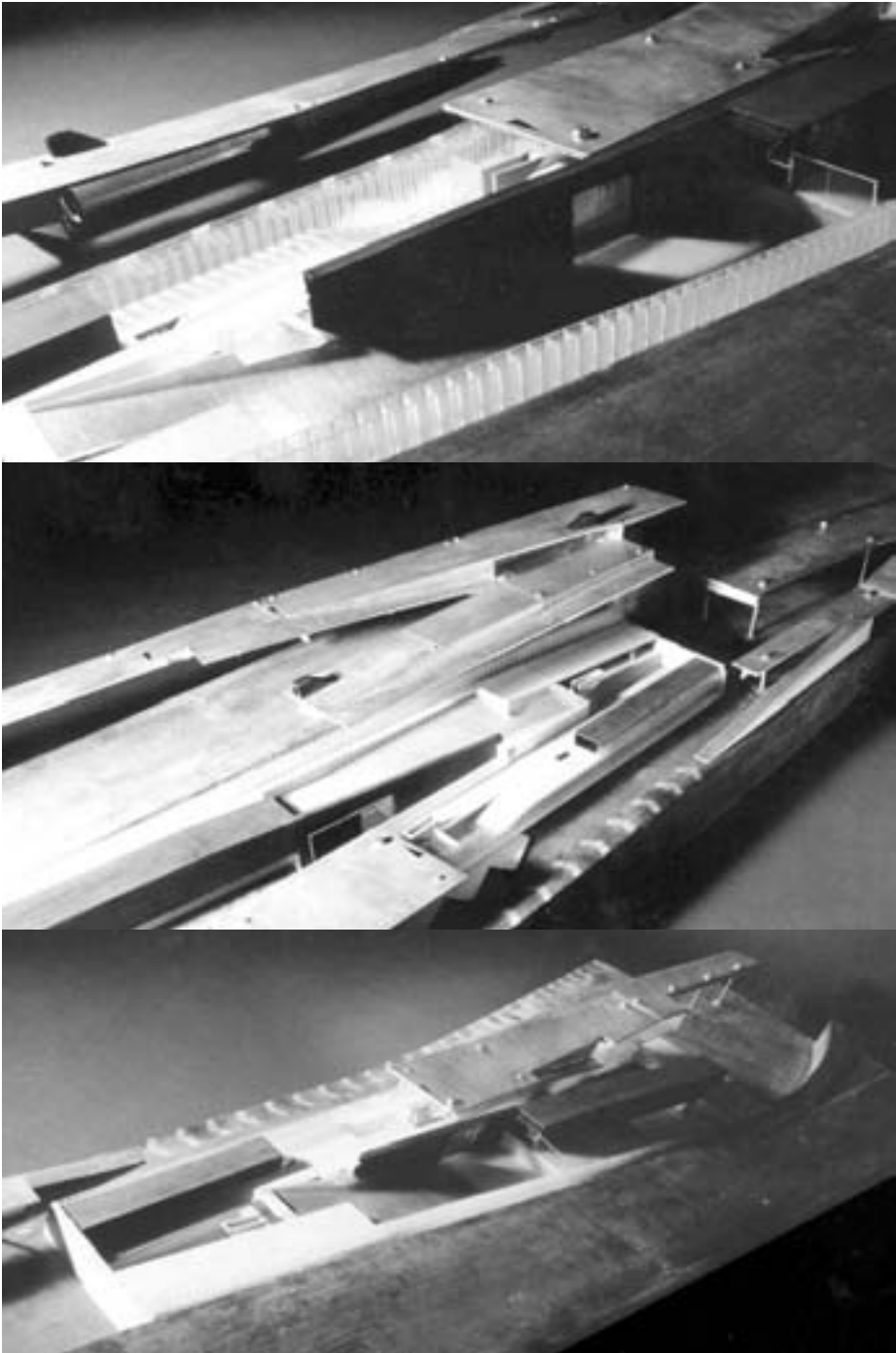


rect and efficient access to the indoor spaces. Entrances are thus multiplied and distributed so as to minimise the walk from the cars down to the indoor activities. Drivers actually have the choice to access two ramps, corresponding to two specific speeds. The first one is like an extra ramp to the interchange, where cars can slow down before stopping. It works as a space of transfer with a programme composed of a bus station, shops, waiting and exhibition areas. By contrast, the second ramp hosts long-term activities: a hotel, office spaces, a multipurpose auditorium, and conference rooms. These programmes are distributed inside the building in a way that allows them to mix with each other. Hotels rooms, for instance, can be turned into offices, and rented for a day or for a week. A number of unprogrammed spaces are preserved in between the two ramps, allowing exhibition spaces and conference rooms to be enlarged or reduced. When they are not used, they become public spaces, atriums, or outdoor courts. On the surface of the ramps, zebra stripes indicate pedestrian spaces, free of cars. In the summer they turn into terraces for informal meetings.

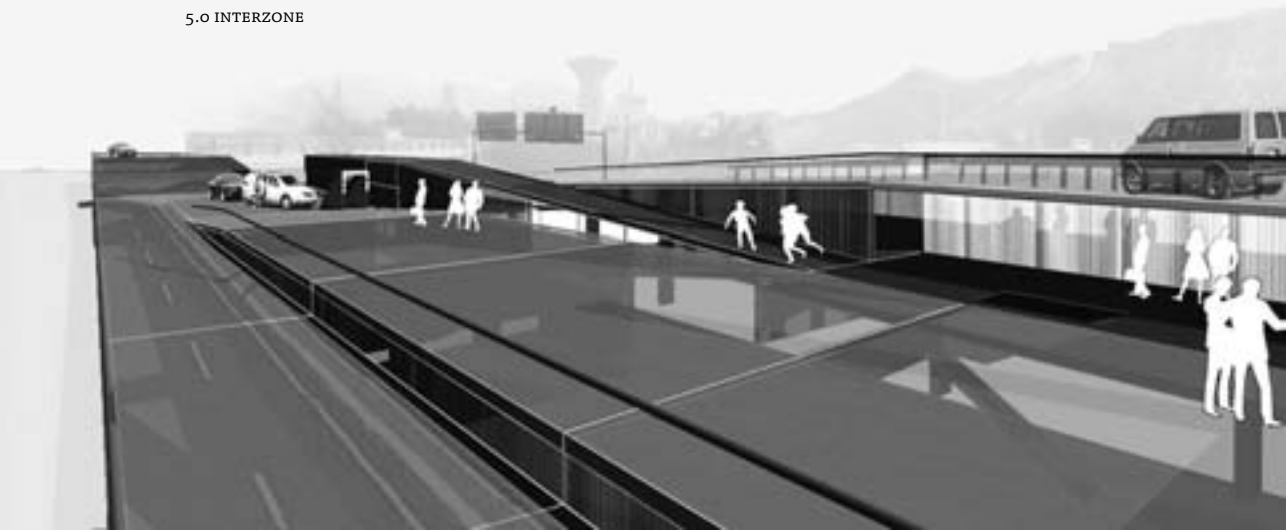
← The surface of the ramps is used as car park. Spaces situated underneath and in-between the ramps are filled with activities.



↑ The ramps are similar to inhabited bridges, associating the respective qualities of the motorway and the city.



↑ View of the “slow” ramp hosting a hotel, office spaces, a multipurpose auditorium, and conference rooms. Hotel rooms can be turned into offices and rented for a day or for a week.



↑ Entrances are multiplied and distributed so as to minimise the walking distance between cars and indoor activities.

This series of intermediary spaces ensures both the flexibility of the overall building and the penetration of flows of air and light.

Through this project I attempt to raise the potential of leftover spaces resulting from the asymmetrical logic of flows. Leftover spaces remaining at the margins of motorways have the quality of viscous materials. They are neither liquid, nor solid. This viscous quality of leftover spaces allows them to act as a new intermediary condition drawing a possible path between the fluidity of flows and the solidity of urban settlements. For architects and urban planners, leftover spaces often look as something dirty and abject, something that is not in its proper place, and befuddles urban order. In her book “Volatile Bodies”, Elizabeth Grosz (1997) discusses the signification of body fluids in relation to the notion of dirt and abjection:

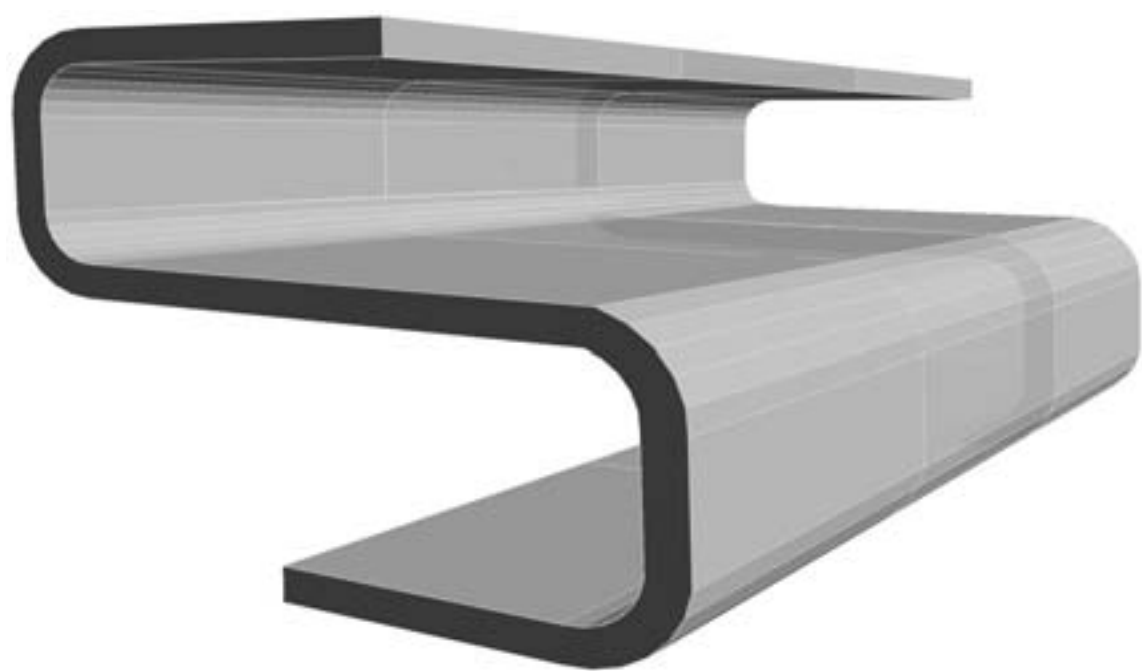
dirt signals a site of possible danger to social and individual systems, a site of vulnerability insofar as the status of dirt as marginal and incorporable always locates sites of potential threat to the system and to the order it both makes possible and problematizes. (192)

Similarly to body fluids, leftover terrain flanking the motorway appears as an irreducible dirt that leaks out of the motorway system, an undignified attribute of the car flow. But if we now look at the motorway through a cross-section, residual spaces might also appear as a process of change, linking the fast and fluid movement of car to the solid and stable urban fabric. They appear as a place where flows and residues

are complementary and irreducible extensions of each other. Their lack of clear boundaries and identity becomes then an implicit argument to disrupt the mono-functional and linear character of the physical infrastructure they stem from. Moreover, Julia Kristeva conceives of body fluids, blood, vomit, saliva, pus or sweat, as paths of entry and exit of human bodies, and as the routes of interchange and traffic between bodies and the world (Grosz 195). Following her argument, we can consider leftover spaces as potential paths between the urban body and large-scale infrastructures. We can view them as a possible site of exchange and a starting point to rethink the conflicting relation between cities and infrastructures. Instead of remaining like an absence, like the expression of a mutual refusal, they contribute to creating a positive superimposition of activities, where the purely economic logic of flows and local cultures start to overlap.



↑ Stretching motorways lanes and diffusing car flows...



← S-Express is a building that develops through a cross-section taking the shape of an “S”.

5.1 S-EXPRESS

— *Project for a service area on the Paris–Strasbourg motorway, France*

— *BMW competition 2000*

— *With David Laperche*

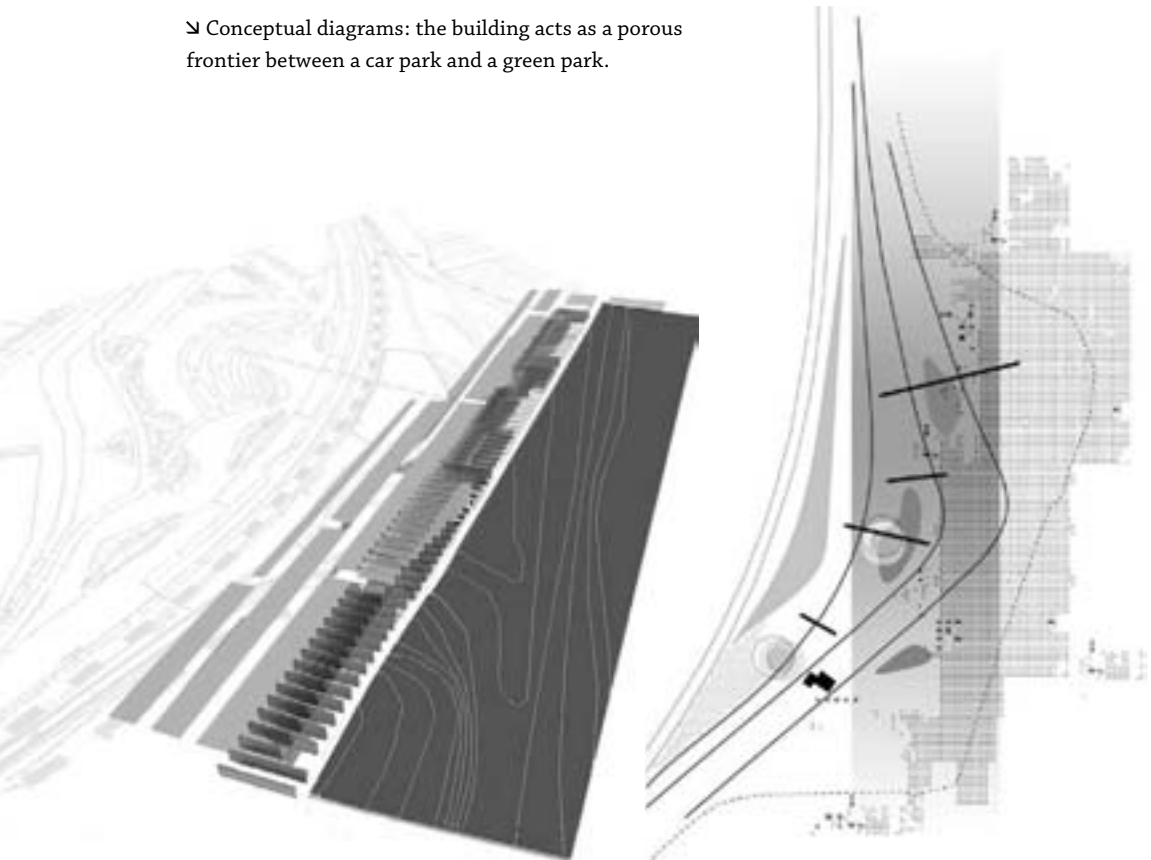
S-Express deals with issues very similar to those of Interzone. It attempts to relate the car flow of the motorway to local programmes, playing on the simultaneity of uses, scales and temporalities. The site is an existing service area situated on the Paris–Strasbourg motorway, far from any major city. The purpose of the project is not so much to connect two irreconcilable instances, but to introduce a singular point of intensity in the continuity of the motorway. S-Express is not therefore an interface, but an interval. It does not aim to connect the motorway to another entity, but tends on the contrary, to manipulate its standard component, while complying with its internal rules.

The programme of S-Express is that of a banal petrol station and service area, completed with a range of leisure activities, such as a 24-hour movie theatre. The main issue of the project is to combine the generic landscape of the motorway, with the more specific services envisioned by the petrol company and the surrounding communes. The aesthetic stemming from such combination usually entails a rather “operator” and technically controlled romanticism, deliberately defined by a shapeless

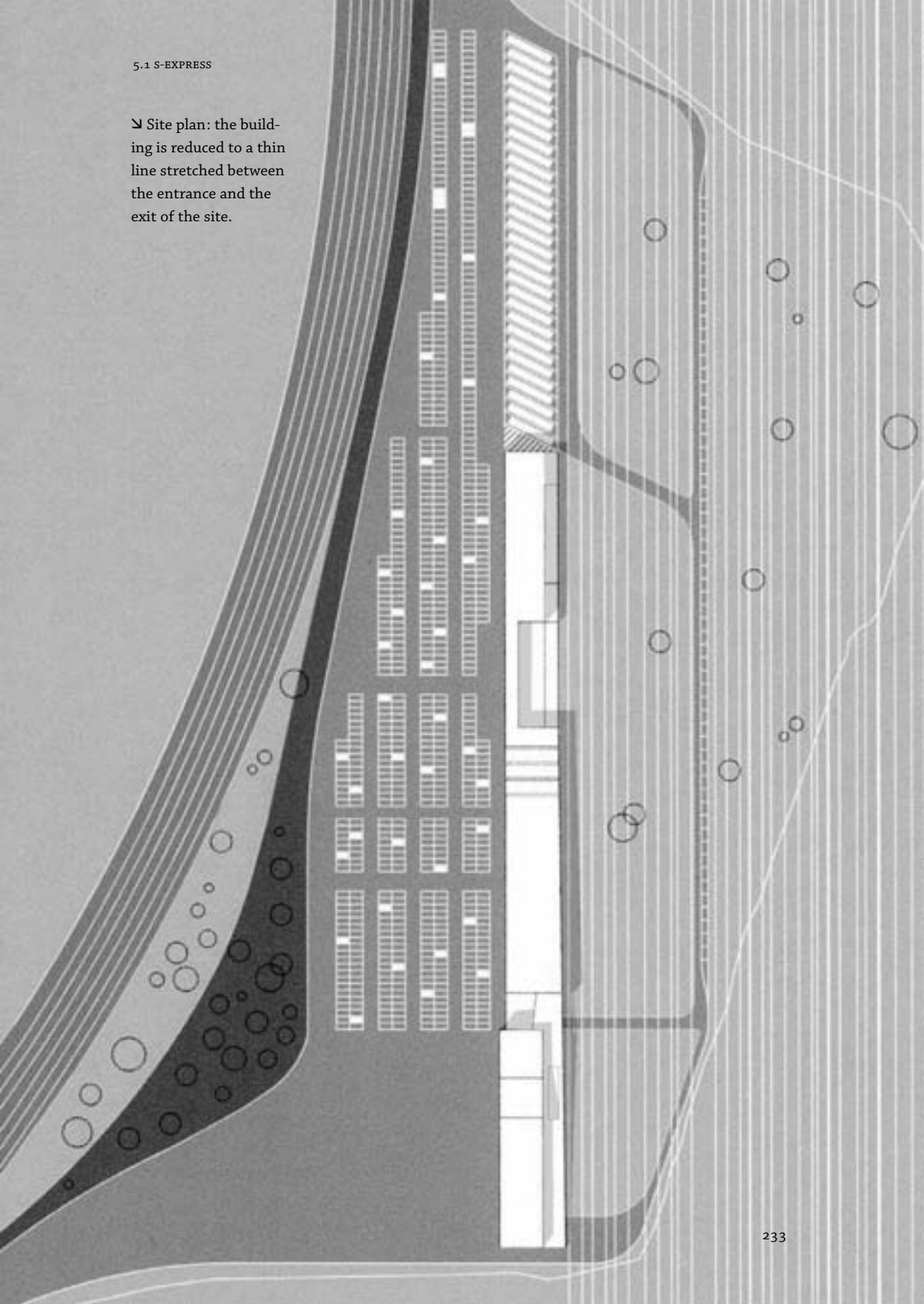
landscape of gloomy green spaces, trash bins, public toilettes, and benches. Hence, the introduction of leisure or tourist activities in service areas often results in an artificial landscape, attempting to disguise the aesthetic of the motorway, and prevent urban and lively atmospheres. In France, for instance, service areas are very much conceived of in the manner of theme parks, taking the shape of typical villages, gifted with a few historical stones, sometimes labelled as roman ruins. If the area is not sufficiently frequented, it is then treated as a vulgar technical enclave.

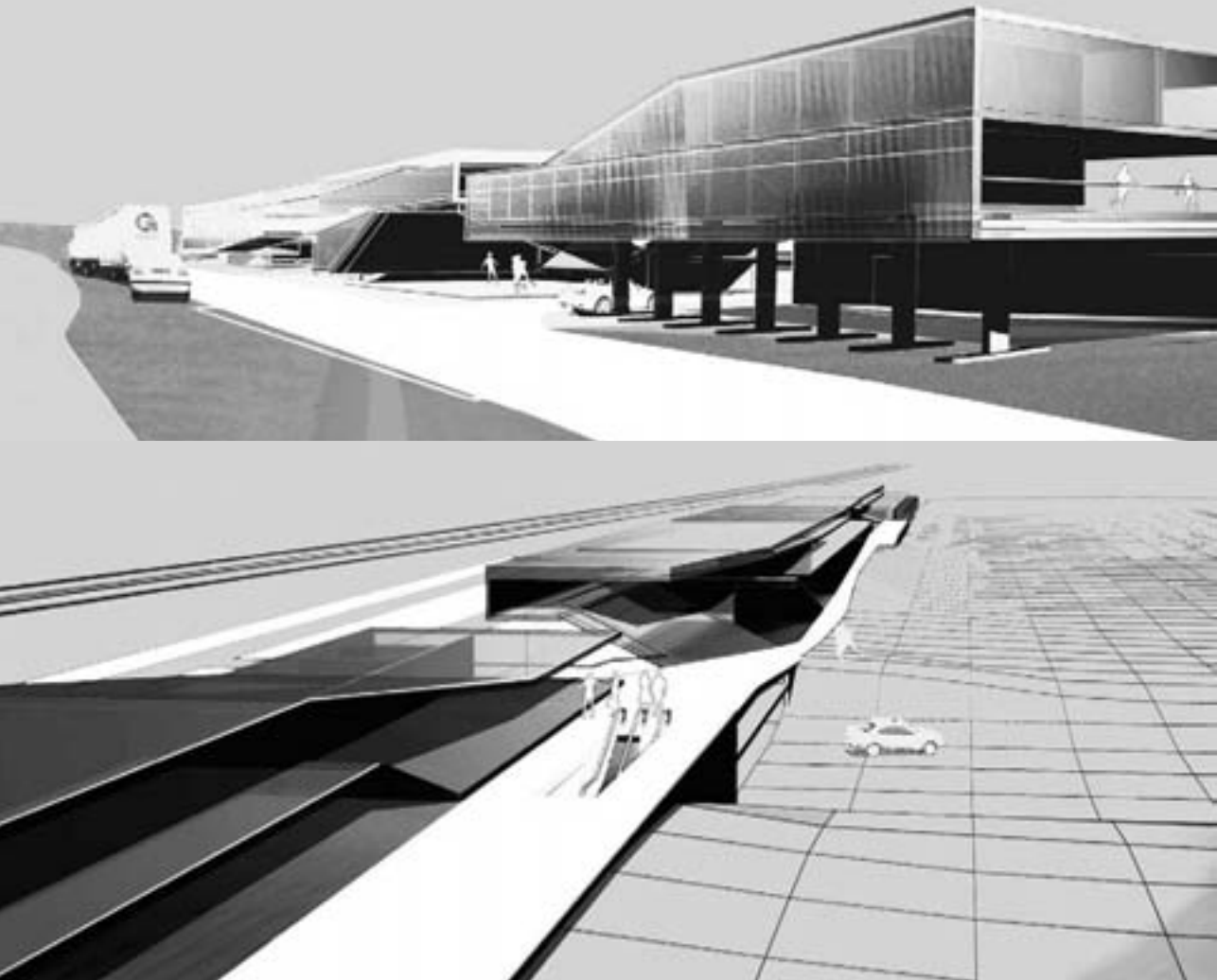
Whereas Interzone achieves the combination of its programmes through a system of interwoven ramps, S-Express develops through a cross-section that takes the shape of an S. Hence, the whole building is conceived as the extrusion of this S shape. The lower side of the S faces the motorway. It integrates the petrol station, the shop, the truckers' corner, and the restaurant. The upper side faces the opposite direction and opens itself to the surrounding landscape. It benefits from a south orientation, and from a natural topography that allows to create a green park. It integrates leisure activi-

↘ Conceptual diagrams: the building acts as a porous frontier between a car park and a green park.



Site plan: the building is reduced to a thin line stretched between the entrance and the exit of the site.

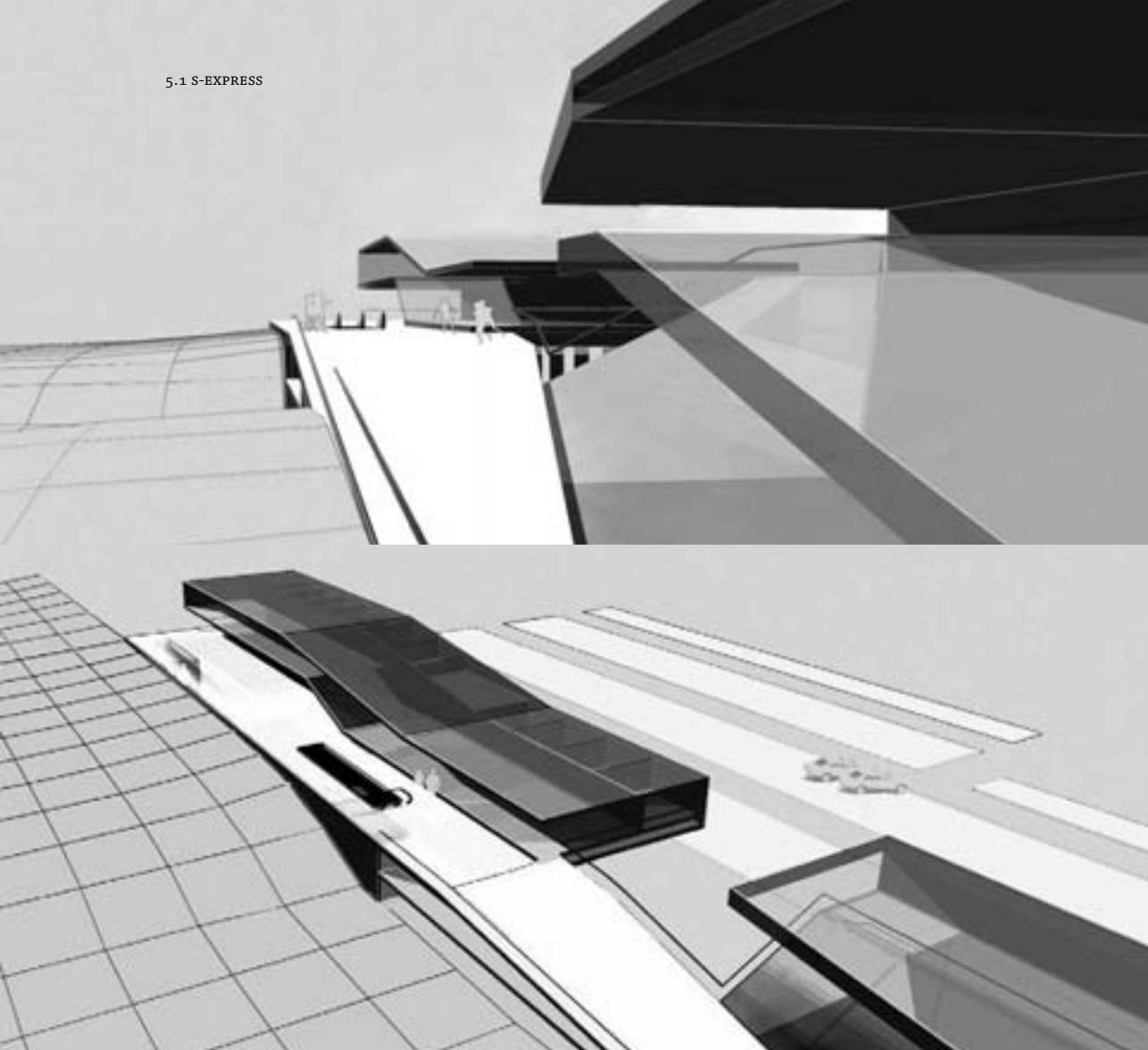




↑ Perspective views of the terrace and motel, situated above the petrol station.

ties such as a gymnasium, video games, a movie theatre, and a motel. All the components of the programme are then contained within a single shape that allows to either separate them, or reinforce their mutual interaction. The S-shaped section allows here to treat the fundamental duality of the infrastructure as a positive condition. It acts as an impetus to bring more activity and favour social interaction along the motorway.

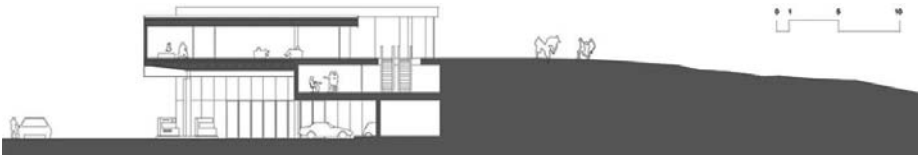
The building is stretched as far as possible in the direction of the car flow. Consequently, the layout of the roads is optimised, and the building is reduced to a thin line, sometimes dense and filled with activities, sometimes empty and porous. This



↑ Perspective views of the petrol station and the linear terrace.

configuration allows views and pathways between the two sides of the building. By stretching the project as far as possible, the movement of cars and people, and the shape of the building become one. There is no distinction between the spaces devoted to movement, such as roads and corridors, and the activities. Each space is conceived as one that people can move through or stop in. S-Express appears then for the car driver as a bifurcation of the motorway, amplified with new activities.

All along the building, the S section undergoes distortions responding to the specific space required for each activity. In a few spots, the building is even interrupted to let



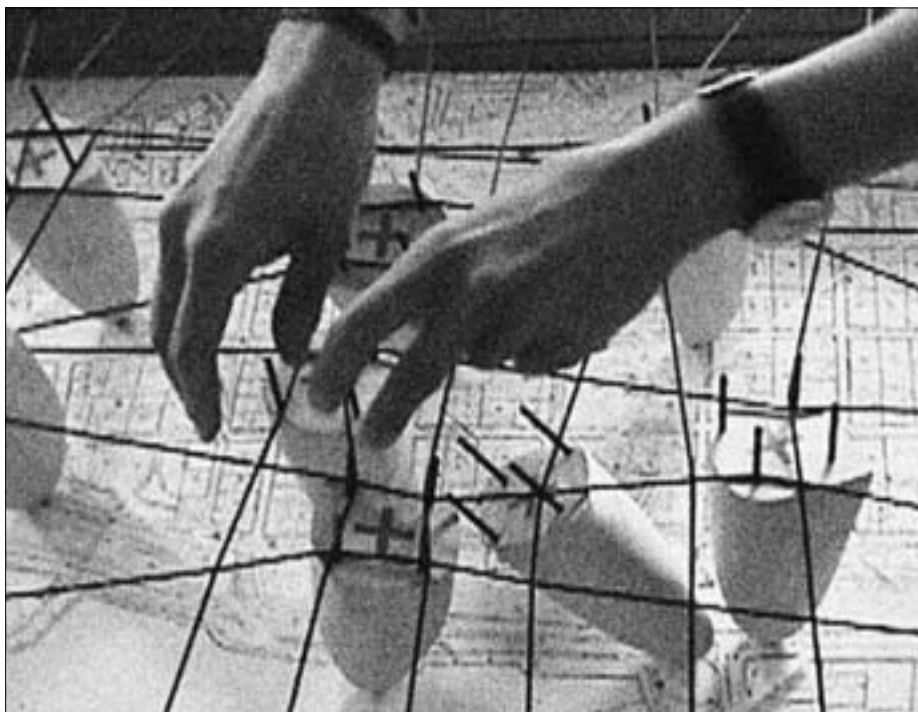
↗ Cross-sections:
the whole building is conceived as a horizontal extrusion of the S-section. The lower side of the section faces the motorway; the upper side opens itself to the landscaped area.



a road go through, and provide park space for the truckers. The width of the building is calibrated on the length of a truck. When trucks come to park in the continuation of the building, they appear like its natural extension. Everyday the building stretches or compresses itself according to the number trucks parked in the service area.

The idea that the building can transform itself through time comes in contradiction to the common opposition between hardware and software. The hardware usually designates the stiff and material component, the part that is stable and hosts the programme. By contrast, the software is the immaterial, updatable and programmable component. It is subject to change and provides all the content. S-Express reverses the roles and suggests that the activities, and the movements of cars and people are the core, the most permanent aspects of the project. By contrasts, the building constitutes itself as a soft core that adapts itself to the fluctuations of the traffic.

In the context of the motorway, the S section holds a particular significance. It develops in a direction that is transversal to the linear flow of the motorway. While a long section only shows sameness and linearity, a cross section shows the connection of the motorway with its surrounding. It reveals differences and variations: the whole programmatic and design potential of the motorway.



← City actors playing with the game box and elaborating an urban scenario.

5.2 URBAN PACEMAKER

— *Scenario game for the Jyväskylä motorway, Finland*

— *International workshop “Soundings for Architecture 2”, August 2000*

— *With Marja Sopanen, Tan Kok Meng and Kenta Kishi*

This third project is a teamwork made in collaboration with Kenta Kishi, Tan Kok-Meng and Maria Sopanen, and supervised by Raoul Bunschoten, during the international workshop “Soundings for Architecture 2”, organised by the Alvar Aalto Academy and the schools of architectures of Finland.

A motorway crosses the city of Jyväskylä, separating the city centre from the lakeshore. The bypass motorway is perceived as a barrier that limits the extension of the city towards the lake. Psychologically cut off, the potential of the lake and its shore remains a nagging problem to be resolved. Hence, the city of Jyväskylä, just like Chambéry, suffers from a disconnection from its infrastructures. Can the motorway act as a connector in this new context? In the following project, possible responses are given through a series of prototypes and scenarios, simulating a change in the city's relation to the motorway. To initiate a strategic approach, we propose a mechanism of change that brings forward the shifting conditions of car traffic. We simulate an event that provokes the temporary closing of the motorway. The objective then is to enhance the variations of car flows, and figure out how new local flows can

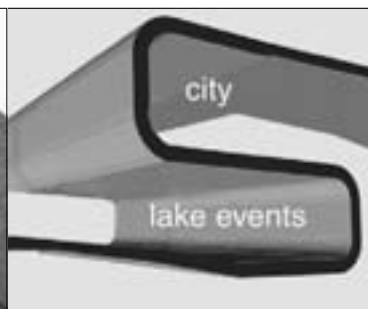
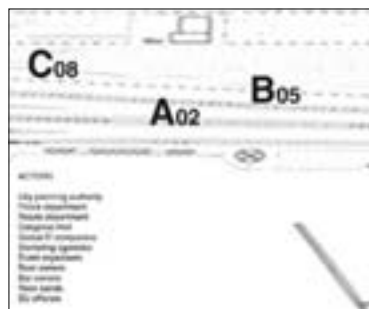
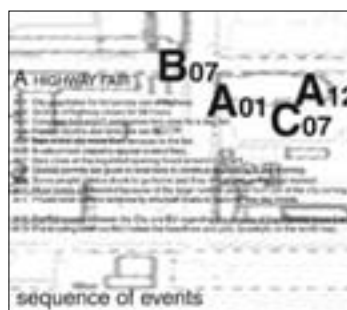
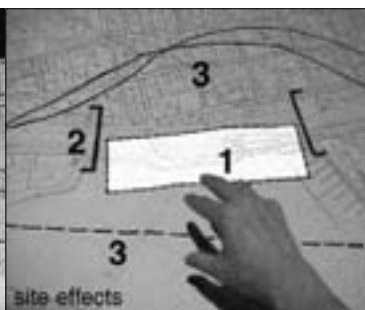
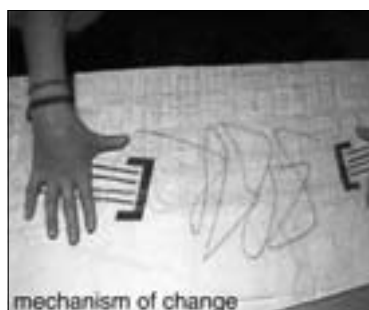
eventually occur between the city and the lake when the motorway is closed off. Quickly, we realise that shifting traffic conditions, from no-flow to viscous movement, to smooth flow, produce three main side (or site) effects:

1. *A no-vehicular flow zone* resulting from the temporary damming of the motorway. The site in between the dammed points becomes an empty flow zone. It opens up a new linear space, which becomes available along the lake for events and subsequent urban developments. A flow of temporary activities can then be imagined to migrate into the new zone.
2. *Controlled traffic congestion*. Traffic congestion occurs at the two ends of the dammed portion of the motorway. This congestion is controlled and allows temporary activities to spontaneously spring forth.
3. *Diversion of flows*. In order to avoid the dammed portion of the motorway, flows are redirected towards other zones such as the gridded centre and the lake. They create new routes acting like “shortcuts”.

Starting from this prototypical situation, we ask the actors of the city, urban planners and architects, transportation and M&E engineers, private developers and university representatives, to seat around a table. We bring them tools: we superimpose a box, similar to a chess box, over the dammed portion of the motorway, provide them with tokens, and ask them to play the role they normally play in the city. The rules of the game are strict but simple. One after the other, they move the tokens, and add a new sentence in the on-going scenario. As the game goes on, the actors push the scenario further. In fact, the game goes so fast that it truly produces a spiral of possibilities. The city appears then like a morphing material, remaking itself over and over.

Through the game, the team sets up different scenarios. In one of them, the urban planner of the city proposes to re-divert the train tracks to give more space to the activities that take place on the lakeshore. The city architect explains that the closing of the motorway will create a conflict between Jyväskylä and the national instances that control the motorway. The conflict makes the headlines and puts the Jyväskylä on the map. The city uses this event as an opportunity to develop a motorway-fair for IT

→ In this scenario, the motorway is closed off, inducing new traffic conditions in the city centre. Players realise that the development of any part of the city catalyses and affects other parts. Introducing the merging “S” from the S-Express project halfway through the game allows to reorient the scenario.



companies, by using the part of the motorway next to the existing congress centre. Product launch events and annual fairs by IT companies are staged on the empty motorway. Leisure events take place on the lake during summer or winter in both its liquid and frozen conditions, while spectators gather in the linear zone and watch. In the Controlled Traffic Congestion Zone, advertisement panels appear to turn the jammed road into a temporary WAP shopping centre where car occupants shop for products from their mobile phones. We call this scenario “the highway fair”.

From there, we propose to transform the motorway into an urban pacemaker, which aspires to be a generic throbbing machine that produces pulses and impulses stimulating chains of reactions in the city. The urban pacemaker is like a time machine playing on various sequences of events, each one having its own time and frequency. For the actors involved in the scenario game, the introduction of the pacemaker over the site delimited by the motorway involves a broader understanding of the dynamics of the strip. It shifts the perception of the motorway from that of a barrier to that of an urban space offering many possibilities related to traffic pulses. What also emerges from the scenario game is the realisation for all players and stakeholders that the development of any part of a city catalyses and affects other parts, aspects, positions, and constituents of the city.

The scenario is not yet over. It continues with new actors and new events. At some opportune moments more permanent gestures or urban prototypes are introduced. These prototypes are brought into the workshop by the team members. They represent general concepts that can be developed into urban form. The Merging “S” from the S-Express project, for instance, is introduced in the game to simulate the overlapping of the city and the lake-shore activities. In its new application, it represents a section of the motorway, suggesting that instead of being an empty strip the motorway can suddenly become a fold where events of the lakeshore and the city overlap each other.



✧ Aerial view: the project develops as a series of urban slices, extending the composite skyline of the city.

5.3 SKYLINES

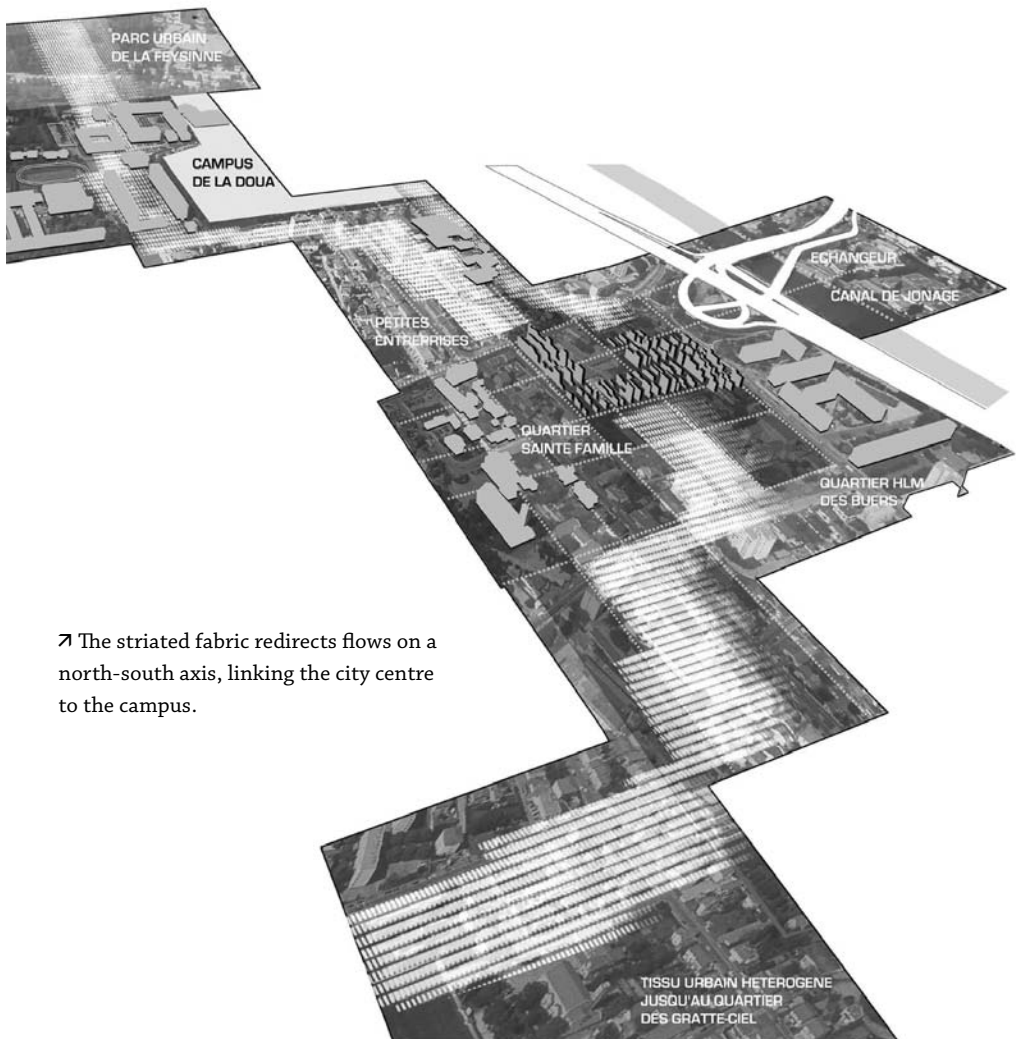
— *Housing development, Villeurbanne, France*
— *European 7 competition 2003*
— *With Yves Moreau*

Skyline is an urban study for a residential area of 300 housing units, situated in the suburb of Lyon. The strategy derives from the presence of an expressway that flanks the site, and causes two main problems: the noise due to the car traffic, and the visual barrier that it creates between the existing district and the canal. The urban scheme responds to these two problems by distributing the new buildings through a series of lines running parallel to the expressway.

In the mid-thirties, the city of Villeurbanne constructs a new centre including two major towers, providing itself with a new skyline and a new urban identity. Our proposition extends this strategy by defining a new series of urban skylines crossing the site from north to south. Each of the skylines unfolds as extension of an adjacent district, thus defining a strategic zone of negotiation initiating the future continuities of the districts. The skylines develop as thin urban slices defining a composite identity and a mix of urban activities. They also create a differentiated landscape whose shape, viewed from the motorway, creates an unexpected kinetic effect. Each urban slice thus act as an urban curtain whose sculptural shape allows car driv-

ers to see the other slices situated behind. The shape of the district creates then a visual depth, combining feelings of density and openness. Moreover, the skylines act as noise barriers. They act as a series of filters that allow to envisage quiet public spaces next to the dense zone of traffic. The question of noise is here integrated in the design process from the very start, making specific means of noise protection become unnecessary.

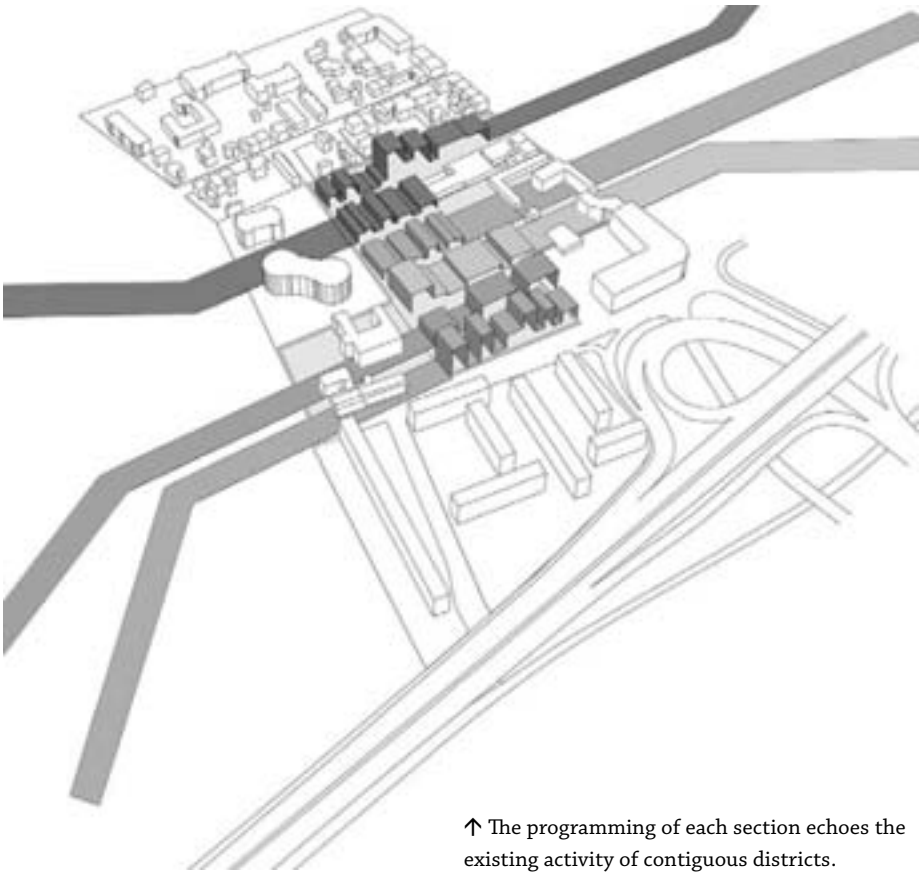
The problem of noise does not of course justify the entire strategy. The striated and vibrating wave created by the different skylines also responds to the fluctuating and heterogeneous fabric of the surrounding district. It allows to define various sequences of spaces and activities, and to redirect local flows through a north-south axis,



➤ The striated fabric redirects flows on a north-south axis, linking the city centre to the campus.

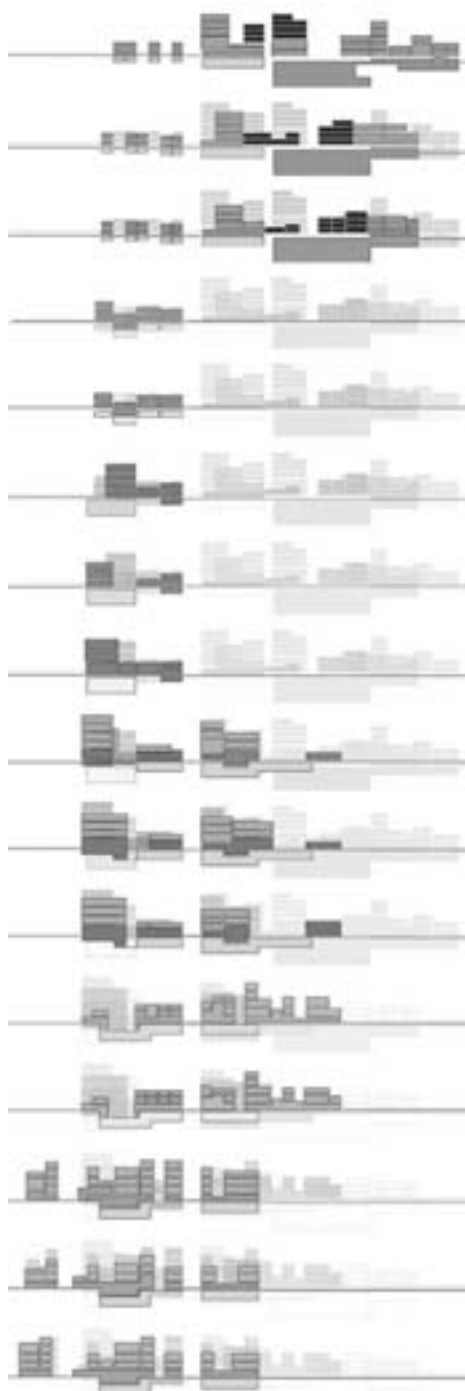


↗ Nuisances stemming from heavy traffic are integrated in the design from the very start. The series of skylines acts as a noise barrier, making noise protections unnecessary.



thus responding to the city's wish to create a new connection between its centre and its campus. The narrow profile of each urban slice engenders then a permeable urban form reaffirming the lively and narrative dimension of the district.

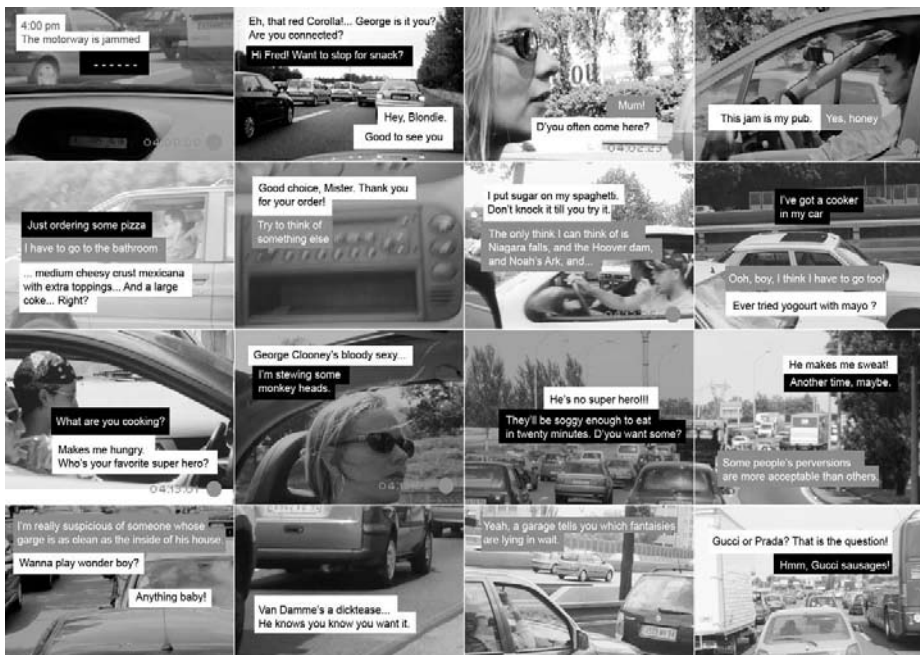
This proposition shows that urban projects can include elements that are situated on a much larger scale than the site itself. It shows also that infrastructures produce a number of secondary effects, which architects and urban designers can either refuse, or accept and use as primary materials of design. Hence, instead of treating the noise produced by the dense traffic of the expressway as a constraint, we chose to use it as an opportunity to define a specific urban shape that could remain open to the flows that cross the city from north to south, and hermetic to the nuisances induced by the expressway.



➤ Diagrammatic representation of the project suggesting a sectional urbanism.



↑ Could we consider traffic jams as relevant social spaces allowing all kinds of events and interactions to take place? ↓

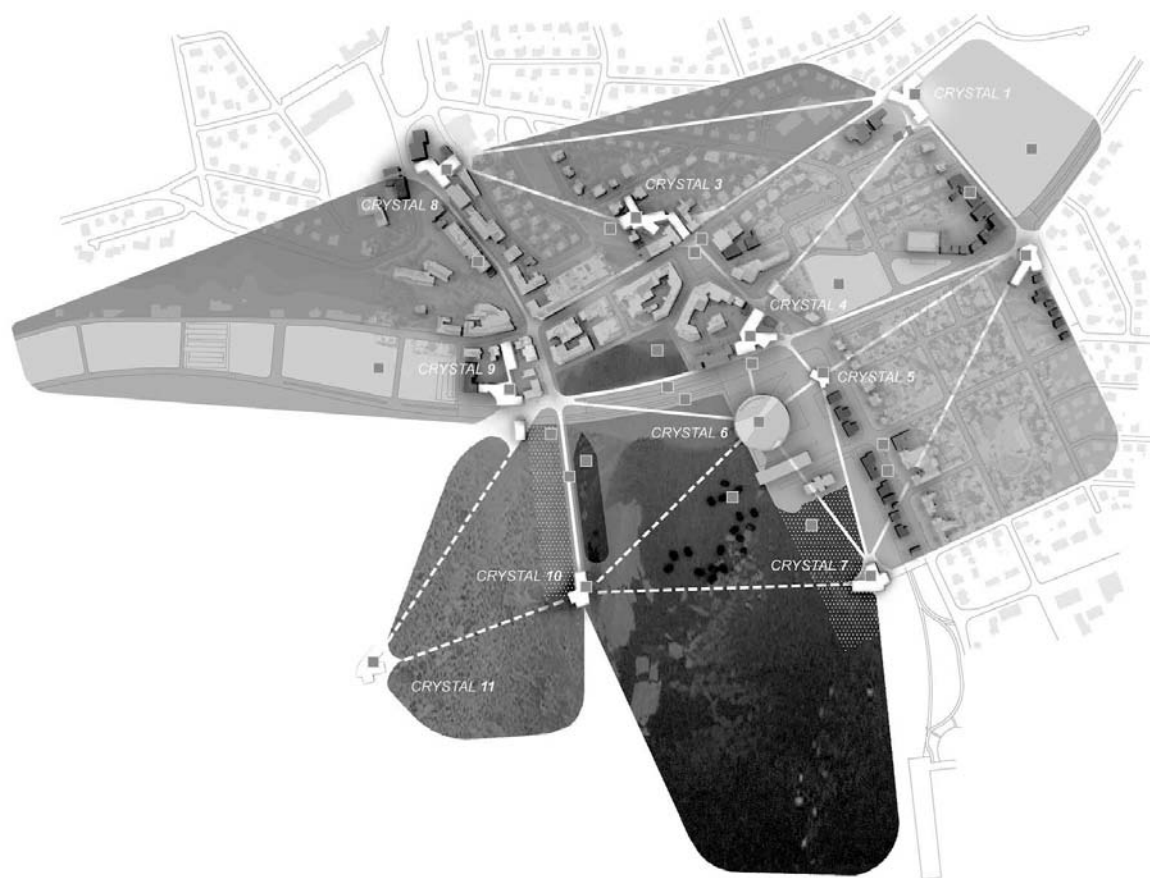


5.4 JAM CRUISING

- *Wi-Fi technology for car drivers*
- *Fused-Space competition, 2004*
- *With Yves Moreau and Minna Nordström*

When a traffic jam occurs, the fluid and seemingly infinite flow of the motorway suddenly shrinks and crystallises into a stagnant and pathetic pack of cars. The traffic jam may then appear as a dysfunctional break, a temporary failure of the motorway system. Yet, when stuck in a traffic jam, many people talk to themselves, sing, smoke, eat, drink, think, shave, do their face, give phone calls, send faxes, or listen to the radio. These individual actions demonstrate that people do not necessarily dislike being stuck in a tailback. Drawing on this positive perception of the traffic jam, we propose to establish a new form of interaction between car drivers.

Traffic is conceived of as a social event that takes the shape of a motorised crowd. This crowd, like any crowd, induces a visual form of interaction. Our project consists in equipping cars with Wi-Fi ships that detect the presence of other cars, and allow car drivers to not only communicate visually, but also talk with each other. The traffic jam becomes then a social space where all kinds of conversations take place. Small talk, flirting, old friends meeting accidentally... It is no longer a dysfunctional failure of the motorway system, but the equivalent of a local café where commuters meet each other everyday.



← Site plan showing the reconfiguration of the city centre of Akureyri through the addition of eleven new buildings.

5.5 THE ELEVEN CRYSTALS

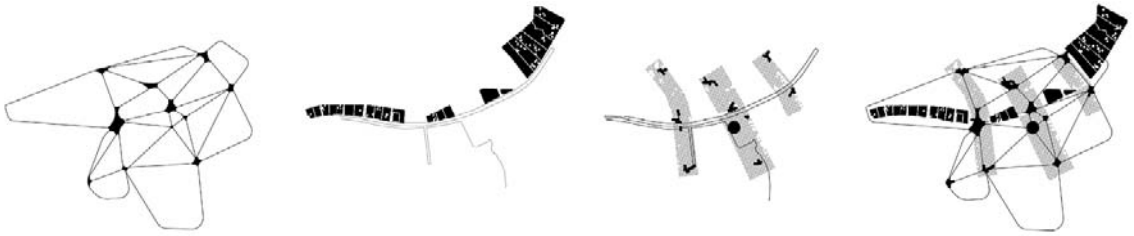
— *Urban scheme for the regeneration of Akureyri, Island*

— *International competition 2005*

— *With Yves Moreau and Paul-Eric Shirr-Bonnans*

Our proposition to regenerate the town of Akureyri lies on two main axes of development: first, the transformation of the national highway 1 running across the city into a green parkway; second, a constellation of “crystal buildings” capable of turning the town centre into an attractive area inflecting and fixing flows of tourists and inhabitants locally.

Crystal buildings, situated along the highway 1, act as a local attractors. They constitute punctual concentrations of activities stimulating urban development in a key location of the town. By inserting a number of them in carefully chosen sites, the municipality and investors encourage and orientate urban development precisely, visibly and incrementally. The sparse distribution of crystal buildings in key areas also means to provide an alternative to building a new urban façade along the highway, as the presence of empty landfills would suggest. This urban façade would reinforce the separation between the centre and the harbour activities, and threaten Akureyri’s unique relation to the fjord. Instead, we propose to use the empty landfills flanking the highway as green open spaces serving as sport garden, pond, fair area,

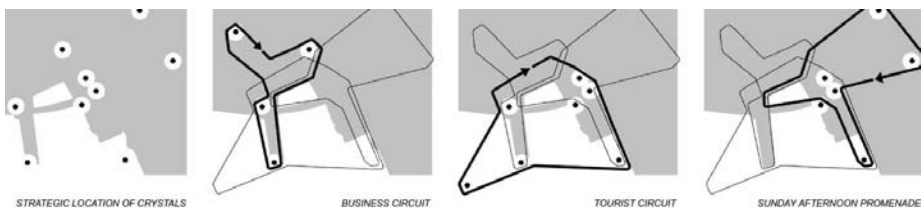


↑ Diagrams indicating the main layers of intervention: 1. network of multifunctional buildings, 2. green spaces situated along the shore, 3. three dense urban corridors linking the city to the harbour.

promenade, and car park. The resulting urban façade takes the form of a curvilinear and porous landscaped frontier that extends the surface of contact between the town and the water.

The function of each crystal is then closely related to its specific location. A sport hall is positioned next to the large residents' park. A workshop building hosting of-fices and ateliers for small companies is situated next to the main square. A new civic centre including the relocated Town Hall is located along the parkway just at the edge of the town centre. A commercial centre, accessible by pedestrians, is situated next to the future culture house. A bus stop and a temporary art pavilion announce the town's regeneration programme. A harbour office, including a restaurant and a small leisure base for tourists and school classes, gives access to a floating hotel. A new art and education centre is linked to the existing museum and workshops. Conference facilities are positioned next the ship terminal. A leisure Island, accessible by boat, is finally imagined as a new attraction for tourists arriving by the sea.

This strategy means to activate the town centre with the least built substance; that is, modify the city's fabric through punctual stimuli that will encourage together a

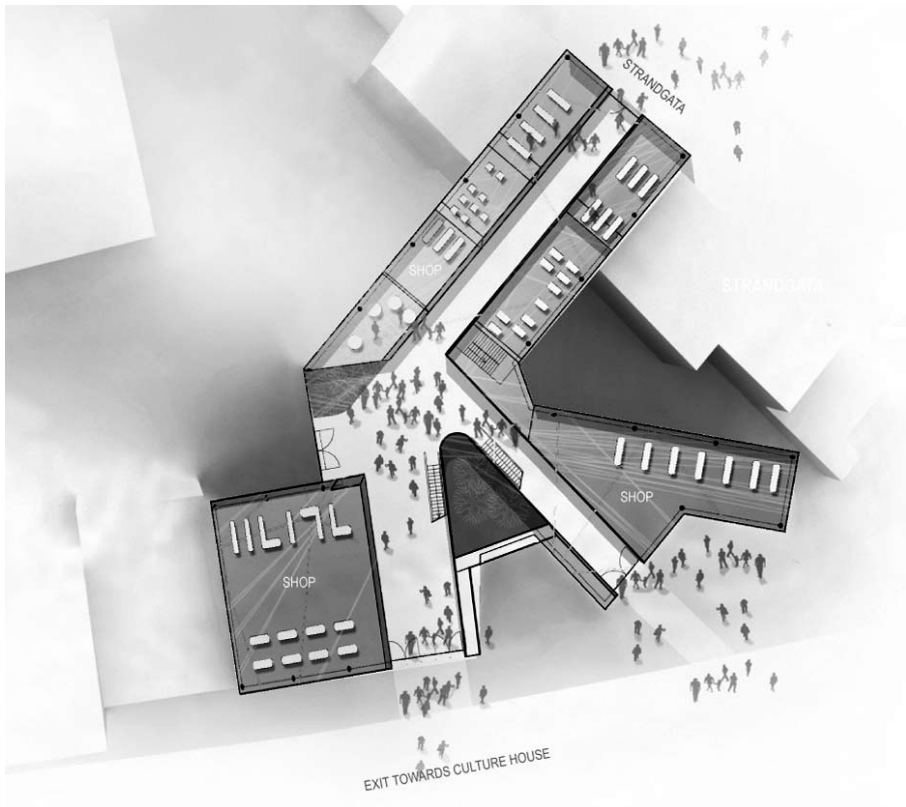


↑ The specific position of crystal buildings induce new circuits across the centre, enhancing business, leisure and social mobilities.



↑ Acupuncture as urban strategy: the existing road system is conceived as a diffused public space giving access to a series of micro urban interventions. ↓







↖ Perspective views showing two examples of crystal buildings: a hotel with conference facilities situated next to the pier, and a new harbour office including a restaurant and access to a “boatel”. ↑

← Ground floor plan of the commercial centre. A public gallery crossing the building provides a new shortcut between the city and the shore.

much broader change. This approach is comparable to acupuncture. The network of crystal buildings creates a body of interactive locations dedicated to leisure, sport, art, or consumption. It allows an incremental and flexible development of Akureyri’s town centre. Each time a new attractor is added, it expands the network and creates new paths and new relations.

Moreover, the location of the different crystals defines a series of East–West urban galleries extending the existing street pattern towards the shore. These paths draw new continuities between the upper part of the town, looking towards the Fjord, and the harbour, thus creating a new articulation between the centre and seaside activities. Each path represents an opportunity to link, visually and spatially, the town centre to the shore, providing views to the surrounding landscape.

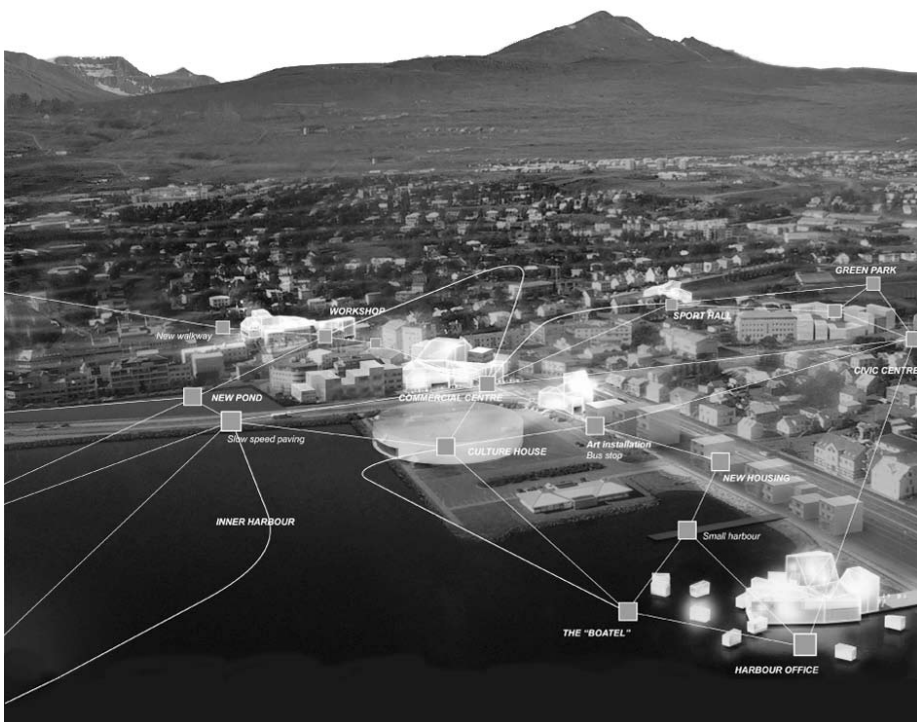
The crystal comes here as a mythic figure referring to the plural aesthetic attributes of Akureyri, such as the Nordic atmosphere and the presence of unique natu-



↑ Section of the “workshop building” containing workspaces for small companies.

ral and geological formations. It also refers to the famous Crystal Palace, a mythic green house which was erected for the 1851 Great Exhibition held in London. It is present in the multifaceted shape of the new buildings themselves. Above public galleries situated on the ground floors of the crystal buildings, stand series of small white and coloured wooden buildings, such as those found in the town centre. They are wrapped in a translucent glass envelope that provides light reflections and allows them to act as a series of landmarks visible from the parkway.

↓ Aerial view showing potential links between new and existing locations.



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CONCLUSION

In this thesis, I have sought to create a productive encounter between contemporary practices of architecture and recent theories regarding global flows. I have, more exactly, operated a transfer of concepts from socio-economics to architectural theory. I have notably used Manuel Castells' concept of the space of flows as a starting point to investigate architectural and urban design in their relation to flows. The concept has then significantly evolved along my argument. It has undergone an incremental metamorphosis, starting from its original and abstract definition, up to my own practice of design, where it became a concrete and tangible device. This metamorphosis translates the argument I have tried to develop through this thesis. We increasingly inhabit flows, either through cutting-edge architecture or through the banal experience of traffic – or both simultaneously, since architects seem to find nowadays an inexhaustible source of inspiration in the ordinary design of infrastructures. As flows of signs and information hit the material ground of cities and infuse our everyday lives and spaces, the infrastructure that carries them tends to play the role of mediator. It nourishes an unprecedented form of urbanity and becomes a strategic object of design for both architecture and urbanism. As a conclusion, I therefore propose to redefine the infrastructure as a new field of practice for architects and urban designers, thus following Stan Allen's plea for an infrastructural form of urbanism (Allen 1999, 46).

In the first section of this thesis, we have seen that flows could be considered as a primary material of design, as much as wood, steel or concrete. Their influence operates notably through the awareness that architects and urban designers have developed regarding the recent mutations of urban space, such as the peripheral sprawl of cities, the formation of vast polycentric urban regions, and the ever-faster recycling of urban space. In the second section, we have seen that global flows have a much more diffused pattern than the archetypal form of global cities suggests. They permeate down to the most common spaces of our lives and involve specific forms of experience. Spaces of transit, crowds or traffic jams are some of the many expressions of global flows, which we are now accustomed to. In the light of this experience, largely derived from my exploration of the European network of motorways, I have tried to demonstrate that standardisation acts as a central mechanism in the transition from flows to places, a key concept that can help us understand the articulation between the abstract and systemic sphere of global flows, and the physical spaces we live in. The theme of standardisation is not new in the field of social theory, since global economies have often been associated with the increasing homogenisation of cultures, aesthetics and life-styles. I have yet argued that it could only be comprehended in relation to the increasing polarisation of space, and the subsequent production of left-overs on every scale. Sameness and difference were then defined as the two sides of the same coin. This view notably meant to overcome the merely symbolic interpretations of urban space, often referring to the postmodern architecture of international corporations as the only expression of global flows, thus opposing the artificiality of flows to the authentic and historically rooted experience of places. By investigating the creative aspects of standardisation, I have attempted to develop, by contrast, a progressive and optimistic conception of flows and places. I have tried to overcome the usual assumption that alienation, hyper-reality and surveillance prevail over freedom, spontaneity, and social appropriation. In the fourth section, I have identified the infrastructure as a third entity in the relation between flows and places, since it works today both as a support of global flows and a space we inhabit. I also called for a redefinition of the infrastructure, as it now shifts from hardware to software. Hence, today's infrastructure is not the factory or the motorway, but discrete social arrangements, such as networks of small cultural industries. The infrastructure could then be envisaged a privileged site of intervention to implement design strategies aimed at fusing flows and places.

In the last section, I took the motorway as a primary field of experiment. This could have seemed contradictory, since it is representative of the old Fordist infrastructure. But we saw that the shift from hardware to software had a retroactive ef-

fect on the old infrastructure, as it could be up-dated through various strategies and mechanics of movement. The choice of the motorway became then a statement in itself. It notably helped to redefine the notions of context and specificity. For, although it is devoid of history and identity, it constitutes, in my opinion, a tangible and meaningful context. It is characterised by a specific culture, specific uses, and a whole set of rules, codes, and constraints. It is a context, I would say, whose specificity relates to the global logic of flows and to the spatial experiences it gives rise to. I have of course been tempted, through the different projects, to apply a recurring method, translating, or resuming my theoretical findings. Hopefully, if there is one design process common to the projects, it is not one of recurrence, but one of iteration, or creative repetition. It is a process that consists in using an initial pattern or idea, and to transform it through successive implementations. The S-shaped section, for instance, was first used in the S-Express project as a means to combine the standard functions of a petrol station with new leisure activities. It was then introduced as an urban prototype in the strategy for the Jyväskylä motorway, as a way to connect the city and its lake shore. The figure of the S thus gained through its second implementation a new strategic significance.

At the beginning of this thesis, my question was: what positions can architects and urban designers hold in face of the new context of interaction created by the global logic of flows? Should they accept it, or not? Can they develop new tools, and redirect their own practices? My response to these questions does not actually translate into a set of principals aimed at integrating flows into architecture, or at adapting buildings to intensified movements of signs and people. Rather, it calls for a particular focus on the notion of infrastructure, as opposed to that of city. It calls for an increased concentration on the infrastructural component of architecture. Hence, the projects I have presented in this thesis are buildings, as much as they are infrastructures. None of them exists by itself. They are all connected to series of technical networks, and involve forces that take shape on a much larger scale than the building site itself. What the logic of flows changes for architecture, in my opinion, is that any building, no matter what its scale or size is, necessitates to be regarded as an extension of one or many existing infrastructures.

This focus on infrastructures certainly derives from my reaction to the distant and top-down conception that socio-economic theories often develop regarding global phenomena, an approach I found incommensurate with the uncertain and fluctuating condition that architectural design faces today. In its original definition, the space of flows suggests, for instance, a very rigid and hierarchical conception of space and infrastructures. It resembles the abstract diagram of a mathematical equation, defined by a set of conditions that undermine the emergence of a global space (such as

the simultaneity of social relation across long distances) and a set of variables (such as networks of actors, companies, and cities). The curve of this equation remains elusive as it comes to the topology of flows, as well as their physical implication upon built environments. It blurs notably as we confront the concept with its contradictory qualities: its erratic character and its strict hierarchy, its exclusiveness and its lack of boundaries, its concentration and its global dispersion... Moreover, the space of flows crystallises in a very stratified diagram. This diagram represents a multi-layered spatiality; it is composed of a series of horizontal planes, superimposed on top of each other, in the manner of a building in construction. The first layer is a technological layer, constituted by the circuits of telecommunication and high-speed transportation. It represents the ensemble of material networks supporting flows, and making possible their synchronic articulation in time. The most important of these networks is the optic fibre network which possesses a large bandwidth, and allows for long-distance interactions in simultaneous time. The second layer is constituted by nodes and hubs. Nodes and hubs define all the places that are linked by electronic and transportation networks. This layer is marked by the variable geometry of flows, and the subsequent weakening position of cities and regions. Contrarily to the first layer, this second layer is place-based, and composed of well-defined localities. The third layer consists of the material and physical manifestation of flows occurring along the main routes and nodes. It is the layer of corporate and generic spaces. It comprises the numerous chains of hotels, conference centres, world trade centres, and airport lounges inhabited by the business elite. This multi-layered diagram thus distinguishes digital flows from the material infrastructure that supports them, and from their physical and urban expressions.

Much of my efforts in this thesis aimed at complicating the diagram and at disrupting its implacable hierarchy. In addition to the primary layers, I first enounced the possibility of inserting vertical paths cutting through the different planes, and punctually disrupting the strata. These paths would represent short intervals of space and time where the different planes merge together. They would indicate particular instances (places or institutions) that dissolve their self-containment and overcome the old hierarchy of scales and the duality between material and immaterial flows. The diagram would have looked very much like Toyo Ito's model for the Sendai mediatheque, which he designed as a series of planes punctually disrupted by fluid vertical paths ensuring the loose connection between the different floors of the building. But if Castells' diagram can be slightly complicated by vertical paths, it still fails to grasp, in my sense, the dynamic and topological qualities of a space that is primarily shaped by flows. It does not translate the kind of diffused and interactive landscape that is taking shape among networks, cities and companies.

The position I now propose consists in merging the different layers into a single surface, to slacken its different strata into a thick, complex and horizontal field. Saskia Sassen's (1999) concept of "cross-border topography" appears, in this respect, as a theoretical model that recovers the complexity and the fluidity of flows. Implicitly drawing on Castells' space of flows, she describes the space created by global economies as a new cross-border topography weaving between the digitalised space of finance activities and the physical space of cities. This topography provides flows with a very material character. Sassen thus explains that there is always a kind of materiality that underlines the world of global business activities, even though they take place partly in electronic space. "These activities inhabit physical spaces, and they inhabit digital spaces", she says. "Even the most digitalised and globalised sector, such as finance, hits the ground at some point in its operations. And when it does, it does so in vast concentrations of material structures" (117). Sassen's emphasis on local economies is another aspect that distinguishes her concept from the space of flows. The cross-border topography she describes is like the space of flows seen from the bottom-up.

Both authors attempt here to define the new spatial form resulting from the intensification of global flows, and concentrate on their economic and financial aspects. But, whereas Castells puts the emphasis on their dominant character, Sassen stresses the decentralised structure of the network economy, its many local ramifications, and its multiple temporalities. Her cross-border topography thus reveals the diffused structure of the space of flows, and the fact that it is, in fact, composed of a multiplicity of local roots. In her definition, space and flows do not contradict, or threaten each other. They are intimately associated in a field-like topography. The local is not considered as a weak "subsequence" of the global, but as one mode in the complex and global process of interaction. Castells' and Sassen's spatial and conceptual constructs imply therefore very different definitions of the infrastructure. The first one is dominant and hierarchical; it corresponds to the old Fordist infrastructure. The second, by contrast, is submissive, loosely distributed and non-linear. It is not a dominant and highly stratified superstructure, detached from our common experience of urban spaces, but a sum of micro-relations linking the many localities distributed along ubiquitous networks of transportation and communication. It is similar to a dynamic aggregate of interacting cities, a vast topography that unfolds across borders, and weaves between digital flows and built environments.

Drawing on Sassen's concept of cross-border topography, I propose to conclude this thesis by redefining the global infrastructure supporting flows, in a way that is commensurate with the fluid condition of today's metropolis, as an artificial construct that possesses a both social and organic behaviour. For, I argue, the notion of infrastruc-

ture might become more significant, in today's urban developments, than the notion of city. This redefinition owes much to Stan Allen's (1999) paper "Infrastructural Urbanism", where he himself defines the infrastructure through seven points. These points are here extended by a series of attributes arising from subjects previously developed in this thesis, notably the subject of crowds, which provides in my view an appropriate metaphor, as it relates to both the physical and phenomenological expression of the global infrastructure of movement.

The shape of this infrastructure is so diffused and encompasses so many intersecting networks, such as satellites, motorways, phone or cable, that it cannot be mapped. Hence, like a crowd, it is defined by the multitude it is made of. In order to exist, it requires a population, or a large number of components. This multitude does not define its size, as much as it defines its behaviour. Because of this multiple character, the infrastructure recognises the collective nature of urban space and allows for the participation of multiple actors. It moves away from self-referentiality, individualism and identity, toward collective work. It develops a tendency to grow and to absorb new units in a continuous way, without rupture or perturbation. Not unlike a computer network composed of a large quantity of computers, it absorbs bugs and errors without disruption (Kelly 1995, 23). The critical mass of the infrastructure acts then as a dynamic factor that multiplies the possibilities of interactions between its components and ensures its continuous behaviour. Although it results from a sum of independent bodies and relations, this behaviour remains perfectly coherent. It is similar to that of a "supra-organism", such as a hive or a school of fish, whose collective and co-ordinated movement can be assimilated to that of a living organism (10). The multiple character of the infrastructure does not yet result in a bland and static consensus, but in a sum of individual behaviours, a multiplicity of subjectivities.

The multiple character of the infrastructure can also be comprehended as a form of redundancy. That is, a capacity to multiply the ways to do something, to meet someone, or to go somewhere. This quality marks a shift from the modern infrastructure, which was conceived of as a mono-functional entity, meant to execute one task, in one possible way. It progresses the idea that the efficiency of the infrastructure stems from the many choices it offers, rather than its absolute effectiveness.

The infrastructure is flexible and anticipatory. It does not progress towards a pre-determined state, but works with time and undergoes permanent changes. Some locations are fixed, some are subject to change. This combination of fixed and undermine elements allows the infrastructure to be both precise and open. It also allows it to be a creative and fashionable device. Like the typographic system, it fluctuates along with contemporary trends; it promotes change and diversity and carries a cultural meaning that varies through time, and along the many countries and regions it crosses.

The standard character of the infrastructure does not refer to a mass production of similar objects and spaces, but to the fact the many networks it is made of develop through compatible formats. These formats are constantly up-dated, in the manner of a computer software. They sustain its ubiquitous presence by adapting to local idiosyncrasies. Hence, generic infrastructures, when they are conceived of as hybrid structures, can accommodate both the continuity of global flows and the differences of local contexts. "In the design of highways, bridges, canals, or aqueducts, for example, an extensive catalogue of strategies exists to accommodate irregularities in the terrain (doglegs, viaducts, cloverleaves, switchbacks, etc.), which are creatively employed to accommodate existing conditions while maintaining functional continuity" (Allen 55). The infrastructure turns then into an active device permitting the local fixation of flows and prefiguring the points of passage between their global trajectories and the cities, regions and countries through which they are distributed. The S-shaped section, as it is implemented in two of the projects presented in this thesis, constitutes the diagrammatic expression of this overlapping. It translates in architectural terms the intersection of global flows and the shifting realities of places.

Far from leading to an increasing homogeneity of the urban landscape, the infrastructure produces complexity. The first reason for this complexity lies in the fact that it is constituted of many layers that superimpose each other. The infrastructure is by default regular, static and pragmatic. When devoid of context, it tends to be hierarchical. However, when it needs to, it absorbs new fields of influence. The effect resulting from the accumulation of different fields is very similar to a *moiré* where two or more repetitive fields superimpose each other, and generate a new field, with more depth and more complicated patterns. Concerning the shape of the infrastructure, the superimposition of networks of various densities prevails over the assemblage of geographical fragment. Unlike modern spaces that associate various objects over a neutral ground, the infrastructure associates objects with objects, and networks with networks. It creates a complex topography the surface of which varies in thickness and intensity, along with the number of objects and networks that it contains. Thickness becomes then the infrastructure's main quality. It translates its capacity to grow, attract, absorb and encourage events and relations, the same way as a street or an expressway may aggregate activities along their sides.

The second reason that causes the complex shape of the infrastructure lies in its disjunctive character. The infrastructure creates tensions and differences. Between North America, Japan and Europe, for instance, telecommunication networks are the thickest. Such differences do not express fundamental oppositions between north and south, or centre and periphery, as much as they reflect the uncontrollable variations that continually put into question the global hierarchy of flows. From this view,

the shape of the infrastructure appears as a complex and dynamic field of interaction, similar to an ever-changing weather map stretched and distorted as it was printed on a rubber sheet, sometimes thick and concentrated, sometimes so thin that it comes to the point of rupture and nearly disappears.

The infrastructure is social before it is technical. It supports flows, but also many activities, relations and events. Movement, in fact, is only one of its many functions. This invokes a certain form of domesticity, proper to each infrastructure, a capacity to be both public and appropriated by individuals. The infrastructure can thus be said to have a certain social behaviour. It can be defined as an “actant”. Bruno Latour (2004) uses the term of actant in order to overcome the opposition between subjects and objects, between nature and society. Actants, for him, are neither subjects, nor objects. They are active agents, actors, or interveners that are not human. When the entities of a collective have the capacity to “hesitate, quake, or induce perplexity”, he says, then there is no reason why we should not define them as social actors (76). The infrastructure can thus be conceived of as a social actor.

This list of attributes, although it is not exhaustive, calls for a shift from the city to the infrastructure. Whereas the city invokes centrality and uniqueness, the infrastructure raises a new form of urbanity both dispersed and multiple. As it absorbs the activities that were so far associated with cities or city centres, and redistributes them on a larger scale, it creates, in turn, an urbanity devoid of centre and periphery. It unfolds through a multiplicity of places, which all carry their own point of view. The infrastructure, in this respect, helps us overcoming the presumed idea according to which the notion of urbanity is necessarily correlated to a spatial hierarchy. It invokes a form of relativism that makes it possible to shift view-points constantly by means of movement, negotiation and debate. The advantage then for architects and urban designers to shift their focus from the city to the infrastructure is that it provides them with a range of new instruments and a series of existing material practices, which they had long abandoned to engineers and technicians. It provides them with a new capacity to record and to listen to the swarming of territorial differences and reclaim a new competence with regard to territorial organisation, urban policies, and networks of transportation and communication.

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CAN architecture continue to relate to the material space of cities and buildings when this space is itself dissolving into flows?

Today, architects shift their attention from semantics to economics. They no longer seek new styles and new languages, but rather concern themselves with data, diagrams and statistics. They design fluid and flexible projects, and redirect their imaginative and technical efforts towards infrastructure, marketing and computer animation. The word “flow” becomes an almost tangible expression of this attitude. “Go with the flow” – or be condemned to marginality! Hence, flows no longer designate a link, a means to go somewhere. They become an end in themselves, a cultural condition of design, architecture and urban planning.

This thesis queries the status of buildings, infrastructure and cities in a space increasingly shaped by flows. How do flows address architecture and urban design? How do they influence their forms, meanings and processes? Can flows become an object of design?