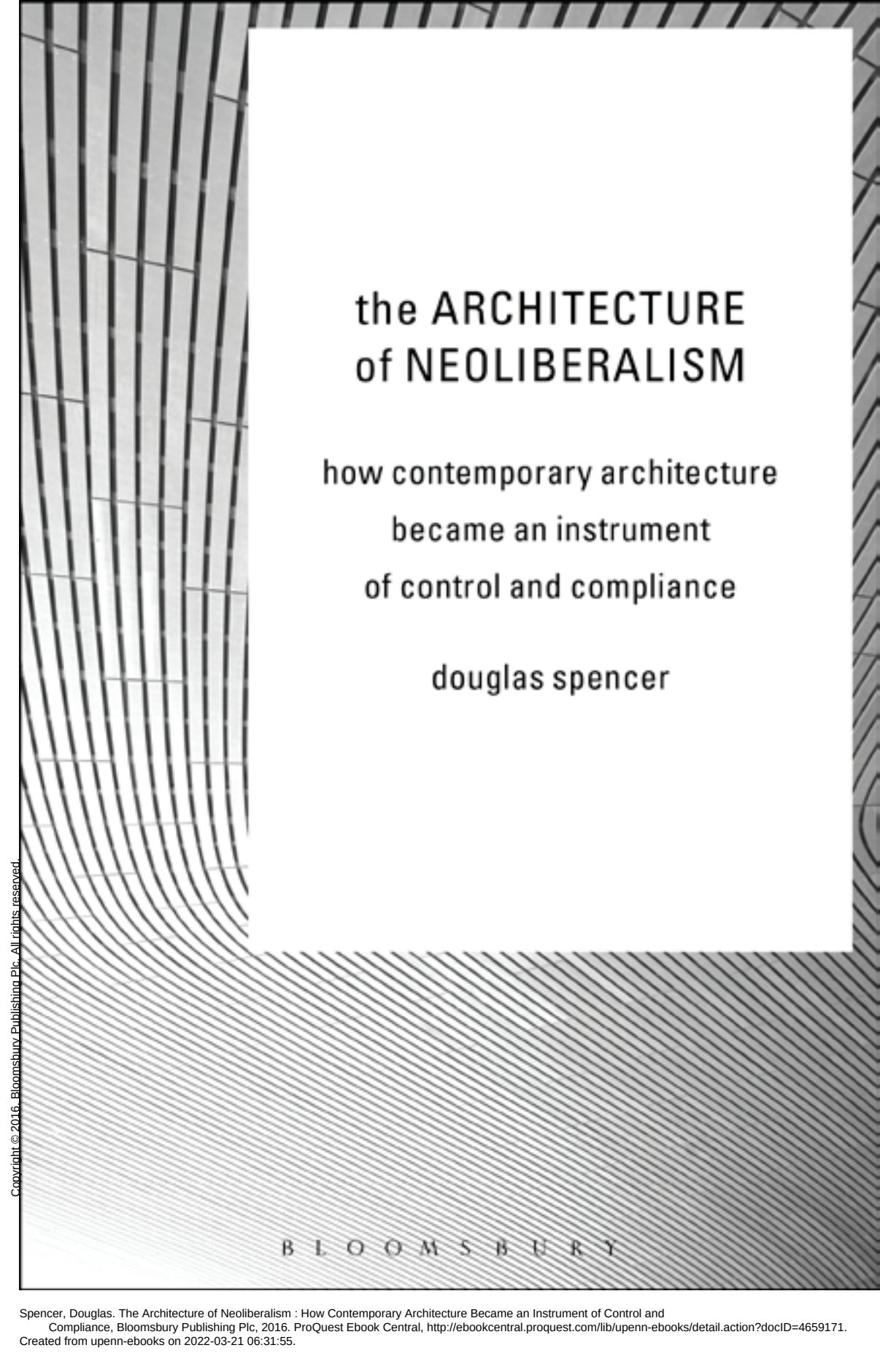




the ARCHITECTURE of NEOLIBERALISM

how contemporary architecture
became an instrument
of control and compliance

douglas spencer

B L O O M S B U R Y

The Architecture of Neoliberalism

Introduction: Architecture, Neoliberalism and the Game of Truth

Swarm-modelled figures dispersed across smooth space. Steered between buildings. Channelled along elevated walkways. The architecture is fluid. Its forms materialize out of thin air or extrude themselves into existence. The pleats, grilles and apertures patterning their surfaces seemingly subject to the same unseen forces. There are no signs of labour. Threaded between the buildings and pathways, sometimes woven into the architectural envelope, are the green spaces that signal sustainability, deference to the laws of nature. The trajectory of the virtual camera as elegantly choreographed as that of the environment it records as it spirals around the site, tracking pathways, banking over structures and hovering, momentarily, over details. (The scenography of contemporary architecture. The friction-free space supposed to liberate the subject from the strictures of both modernism and modernity, to reunite it with nature, to liberate its nomadic, social and creative dispositions, to re-enchant its sensory experience of the world, to conjoin it with a technology itself now operating in accord with the very laws of the material universe, with emergence, self-organization and complexity.)

What is being played out in this scenography is the spatial complement of contemporary processes of neoliberalization. What was championed, only half-ironically, by Jeff Kipnis in 1993 as the 'New Architecture' – also known, variously, as projective, post-critical or Deleuzian, an architecture of folding, complexity or parametricism, the architecture of Greg Lynn, Zaha Hadid, Alejandro Zaera-Polo, Farshid Moussavi, Reiser + Umemoto, Lars Spuybroek, latterly Rem Koolhaas, to name some of its more prominent practitioners – is in thrall to the same notions of liberty as are propounded in neoliberal thought. Both parties profess their hatred of hierarchical planning and their enthusiasms for spontaneous ordering and self-organization. Both have drawn substantially upon systems theory and cybernetics in the development of their theories and practices. What they share, most of all, (is a conception of the nature of the human subject, of its relations with the world around it, and of how it should be governed).

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This shared understanding of subjectivity has furnished architecture with the opportunity to design and build for the continued expansion of neoliberalism into the worlds of work, education, culture and consumption, both in the West and beyond, within the territories latterly exposed to its influence.

Michel Foucault examined the operative nature of the neoliberal truths of subjectivity, the truths put about through which architecture has legitimated its post-critical and projective turn as progressive and emancipatory. 'Truth games,' he said, are implements in the production of subjectivity. They legitimate forms of power that operate on and through the constitution of the self. (They are also themselves produced – constituted and constructed by interested parties – before being put into play as techniques of power.) The rules of the truth game, though, require that the contrivance of its truths be concealed from the players.¹ This rule maintains the operative capacity of the truths constructed, that they are accepted as the given conditions that determine how things must, of necessity, be managed. Truth games do not rule from outside or above, but by embedding themselves in forms of common knowledge and practice. (As Dardot and Laval write in *The New Way of the World*, 'The truth cannot be resisted; it can only be approached. For it does not command, but imposes itself by getting itself acknowledged.'²

Neoliberalism is a truth game. Its accounts of human knowledge, social complexity and the economic market legitimate its management of individuals. Among the fundamental truths that neoliberal thought has constructed are those that state that individuals can achieve only a narrow and very limited knowledge of the real complexities of the world; that the planning of society by individuals is, consequently, an untenable proposition; that the economic market is better able to calculate, process and spontaneously order society than the state is able to; that the competition between individuals facilitated by equality of access to the market is a natural state of affairs; that the job of the state is to intervene to ensure the conditions of possibility that sustain the operation of the market and to ensure that individuals are rendered adaptable and responsive to these conditions; that its truths are a guarantee of liberty.

The corollary of these truths is that (a specifically neoliberal form of power works to produce the subjects of its competitive market order through the milieu of the market itself, rather than through the direct and disciplinary administration of the state and its institutions.) The market exercises control of the subject – its processing, modelling and constitution – through the immanent conditions of an entrepreneurial environment that is itself sustained by these same subjects, and through the forms of strategic state intervention that ensure its survival as the only game in town.

Since their first organized gathering, at the Walter Lippmann Colloquium held in Paris in 1938, attended by figures including Wilhelm Röpke and Alexander Rüstow of the German 'ordoliberal' school, Friedrich Hayek and Ludwig von Mises of the Austrian (later to be Austro-American) school, and the Hungarian polymath Michael Polanyi, the proponents of neoliberalism have concentrated as much effort on the circulation and acknowledgement of their truths as on their construction. What Philip Mirowski describes as the 'Neoliberal Thought Collective'³ also including figures such as Milton Friedman and Gary Becker, has always been concerned with having its knowledge accepted so as to inform a 'policy of society' and its management, rather than being taken as a purely economic model.⁴ 'Neoliberal intellectuals,' writes Mirowski, 'identified their immediate targets as elite civil society. Their efforts were primarily aimed at winning over intellectuals and opinion leaders of future generations, and their primary instrument was redefining the place of knowledge in society.'⁵ In the 1949 essay 'The Intellectuals and Socialism,' Hayek described the precise function of these 'intellectuals and opinion leaders.' He noted the success of socialism in propagating ideas within the working classes that had not, he argued, originated in the minds of that class, and proposed that the methods of socialism be emulated in order to spread the cause of neoliberalism. The intellectual, a figure he described as a 'second-hand dealer in ideas',⁶

need not possess special knowledge of anything in particular, nor need he even be particularly intelligent, to perform his role as intermediary in the spreading of ideas. What qualifies him for his job is the wide range of subjects on which he can readily talk and write, and a position or habits through which he becomes acquainted with new ideas sooner than those to whom he addresses himself.⁷

In *Law, Legislation and Liberty*, Hayek wrote of the 'need to gain the support of those second-hand dealers of ideas, mainly in what are now called the "media," who largely determine public opinion'. This project – the neoliberalization of common knowledge – pursued through means such as the establishment of the Mont Pelerin society in 1947, and the numerous think tanks and policy units aligned to its trajectory formed since then, has been profoundly successful. As Mirowski writes, 'Neoliberalism as a world view has sunk its roots deep into everyday life, almost to the point of passing as the "ideology of no ideology."⁸

Architectural culture has, especially since the late 1960s, also been concerned with the propagation of certain truths – about the discipline, its theory and its practice – derived from other fields of knowledge including, but not limited to, those of philosophy, linguistics, media, physics, biology, computation and

mathematics. Of late, it has shown signs of readily embracing and propagating the tenets of neoliberalism's truths. Patrik Schumacher, in the essay 'Free Market Urbanism – Urbanism Beyond Planning', argues:

Perhaps society should allow the market to discover the most productive mix and arrangement of land uses, a distribution that garners synergies and maximizes overall value. The market process is an evolutionary process that operates via mutation (trial and error), selection and reproduction. It is self-correcting, self-regulation [*sic*], leading to a self-organized order. Thus we might presume that the land use allocation and thus the programmatic dimension of the urban and architectural order is to be determined by architecture's private clients.⁹⁾

While architects and architectural theorists have generally been less brazen about their enthusiasms for the subsumption of the urban and architectural orders to those of the market, they have tended, since the mid-1990s in particular, to push those same truths of the way of the world as have served the truth games of neoliberalism. (They have adopted models of self-organization, emergence and complexity, endorsed cybernetics, systems theory and ecological thought, denounced the failings of planning in favour of evolutionary paradigms, valorized 'flat ontologies' and enthused over metabolic processes.¹⁰⁾ They have, above all, posited the human subject as kind of post-enlightenment being – environmentally adaptive and driven by affect rather than rationality, flexibly amenable to being channelled along certain pathways, but uninterested in, even incapable of, critical reflection upon its milieu. As with neoliberal thought, much of architecture's intellectual culture posits the construction of the subject and the social order as akin to the operation of natural systems. The function of architecture prescribed by this position is that of producing endlessly flexible environments for infinitely adaptable subjects. As neoliberalism presents itself as a series of propositions in the pursuit of liberty, architecture presents itself as progressive. This is the truth game of architecture.

The confluences between these two truth games, the kinds of theorizing, discourse and practices they legitimate, and the productions of subjectivity that they posit are the concerns of this book. So too are the resources and practices, the turns and manoeuvres, through which architecture has come to serve as an instrument of control and compliance for contemporary processes of neoliberalization.

The book's first chapter, 'The Art of Neoliberal Governmentality', sets out the definition of neoliberalism with which *The Architecture of Neoliberalism* is working. Rather than understanding neoliberalism simply as the unbridled

and extreme expression of capitalism, I understand it as an ideology, albeit an 'ideology of no ideology'. As Jeremy Gilbert has recently noted, on the necessity of distinguishing between capitalism and neoliberalism, 'neoliberalism and capitalism are simply different types of thing. Capitalism is not an ideology.'¹¹ Neoliberalism, he writes, 'is the name for a particular political philosophy and set of beliefs, and the political programmes informed by them, which claim to understand something about human nature and economics, and which claims that their understanding of human nature and economics gives them superior insights into how to use government mechanisms in order to maximise human flourishing'.¹² There is, of course, a relationship between neoliberalism and capitalism. As Gilbert argues, neoliberalism believes 'that the only real way to maximise human flourishing is to maximise the profits of capitalists'. But the distinction between the two needs to be made, not least in order to produce an effectively critical account of architecture's relationship to neoliberalism; one that does more than present the naive and dubious charge that architecture, pejoratively labelled as 'neoliberal', has only lately become enmeshed in systems of power and money.

While I call extensively – though not uncritically – upon a variety of Marxian schools of thought and thinkers throughout this book, I turn outside of these in order to account for and define the ideology of neoliberalism, particularly as it relates to the question of subjectivity. Against Marxian understandings of neoliberalism, particularly those of David Harvey,¹³ in which neoliberalism is presented as an outcome of the 'logic of capital', I draw upon the recent work of Philip Mirowski and Pierre Dardot and Christian Laval, so as to sketch out a historical understanding of what Mirowski has called the 'neoliberal thought collective' in its ideological specificity, and to understand the kind of mentality with which it operates today in what Dardot and Laval tellingly describe as the neoliberal 'way of the world'.¹⁴ It is the work of (Foucault on governmentality,) on the 'production of subjectivity' and the 'care of the self', however, that is pivotal to the understanding of neoliberalism that I represent here. In the development of neoliberal thought, Foucault remarked, 'the formal principles of a market economy' are projected 'on to a general art of government'.¹⁵ [Neoliberalism is understood by Foucault as a form of governmentality with its own particular apparatuses and techniques, its own means of 'taking care' of the self, though not for the self, but in order to render it entrepreneurial, to shape it in accord with neoliberal beliefs about the essential nature of the subject and its relationship to the putatively progressive and evolutionary forces of the market.] *nre*

This chapter then turns to look directly at the foundational writings of neoliberal thinkers, especially those of Hayek and Polanyi, so as to explore the substance and construction of their arguments, particularly as these pertain to their understandings of knowledge and its circulation. I also address the significance of the notions of 'complexity' and 'spontaneous ordering' as these are developed in the thought of Hayek and Polanyi. These notions, derived chiefly from systems theory and cybernetics, and turned into dogmatic universal principles, become the instruments of neoliberal modes of governmentality; techniques based more on the steering, guidance and control of conduct than on the use of blunt instruments of discipline and the naked exercise of hierarchical power.

An understanding of neoliberal dogma alone, though, cannot be counted on to explain how the framing and control of subjectivity in relation to its environments – through which Foucault claims its power is effected – is actually achieved. This is a process with its own historical development, ranging across the fields of architecture, technology and culture which, while typically informed by cybernetics, systems theory and models of complexity, are not explicitly neoliberal. Chapter 2, 'The Spatial Constitution of the Neoliberal Subject', engages with this history. It begins within an exploration of how figures in the Independent Group in Britain developed and promoted new forms of artistic practice aiming to circumvent existing conventions of distance and judgement in the reception of culture. It also addresses how these ideas and practices correspond with those developed contemporaneously in the United States by figures such as Allan Kaprow, in his writings on Jackson Pollock, and his involvement in the development of the 'happening'. In both cases, immediacy and immersion are affirmed as conditions of spatial and visual experience and in ways that set clear precedents for more recent affirmations of immediacy and affect within contemporary architecture.

Through a comparative analysis of the films *Alphaville* (1965) by Jean Luc Godard, and *THX1138* (1971) by George Lucas, I explore the differing reactions of the New Left and the counterculture to the technocratic fears of the 1960s and early 1970s. Whereas the left, I argue, tended to see technology as an instrument of state power that could itself only be overcome through collective revolutionary social transformation, the counterculture, as represented in *THX 1138*'s individually rebellious protagonist and in the technophilic sensibilities of its conclusion, saw things differently and in ways that were prescient of the development of neoliberal mentalities. The possibilities of a new contract between nature, man and technology explored by the counterculture

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Before the ‘new architecture’ of the 1990s could reconnect with this tendency – I argue in this book’s third chapter, ‘Architectural Theory: From May 68 to the “Real” of the Market’ – it had to deal with the problem of theory. What François Cusset termed the ‘madness’ of theory had formed, particularly in the fallout from May 68, what was recognized in retrospect as a kind of demonic possession that had to be exorcized from architectural discourse.¹⁶ The intellectual thrills opened up to architecture, especially by what came to be known as ‘continental theory’, were now castigated by figures like Michael Speaks as obstructions to the proper business of architectural work, that of finding clients and designing for them. I explore the so-called post-critical turn to which this rejection of theory was related, but also argue that (this does not so much mark the end of theory as the end of its being allowed to be a disruptive influence.) A certain tendency in architectural culture sets itself the managerial task of rejecting the ‘negative’ theory that obstructs its practice, and sets about locating (the type of theory through which it can, in turn, manage its own discourse about itself.

On the one hand this newly disciplined theory would be progressive, avant-garde, even emancipatory, on the other it would be practical and fine-tuned to the real needs of the real world 'as found' in post-Fordist capitalism. The prime instruments of this project, in the first instance, are the writings of Deleuze and Guattari and so-called complexity theory. Later these are supplemented with other theories, those of Manuel DeLanda, Bruno Latour and Niklas Luhmann through which Schumacher, Polo, Moussavi and others have constructed arguments in favour of the operation of free markets. Here I analyse the key writings – those by Kipnis, Polo, Lynn, Speaks, Schumacher and others – through which these positions have been articulated, so as to demonstrate and challenge the discursive manoeuvres through which architecture comes to be a managerial practice.

Where the first three chapters of *The Architecture of Neoliberalism* explore how architecture came to operate as an instrument of neoliberal governmentality, and of the conditions, arguments and precedents that opened up this possibility, the following three chapters examine how this has worked out in practice. The fourth chapter, 'Labour Theory: Architecture, Work and Neoliberalism', begins by noting that contemporary architecture is unable to countenance the facts of labour, its hardships, struggles and precarities. It obscures them with the rhetoric of self-organization and autogenic self-creation which it shares with the doxa of neoliberalism. Practically, even the construction of architecture itself is disguised in the phantasmagoria of smooth surfaces and elegant forms wrapped around its structural armatures. Examining the ways in which practices of labour, and its management, have developed according to neoliberal imperatives, I reflect on how these might be critically accounted for, given the existing material on this presented in accounts of immaterial labour, in Boltanski and Chiappello's *The New Spirit of Capitalism* and in the writings of Moishe Postone. These theoretical reflections are then turned towards an analysis of Zaha Hadid Architects' design for the Central Building of BMW Leipzig. Here, the broader mechanisms of neoliberal governmentality now operative in the former East Germany are shown to be well served by an architecture able to establish a spatial framework for maximizing the productivity of precarious labour while, at the same time, providing an image of socially oriented collectivity. The Office for Metropolitan Architecture's (OMA) China Central Television (CCTV) Headquarters in Beijing is the second case examined in this chapter. I read the form of this building as a refinement of the hyperbuilding prototype earlier developed in Rem Koolhaas' office, one designed to produce more efficient means of corporate staff management. On this basis, I challenge the official account of the CCTV project, circulated by Koolhaas and his partner in the project, Ole Scheeren, that this is some kind of communist project, executed in the service of 'the people'. Rather, I argue, it is a project finely calibrated to the demands placed on the introduction of neoliberal models labour, and for managing the public perception of the state, in the singular conditions of a neoliberalism 'with Chinese characteristics'.

Chapter 5, 'Festivals of Circulation: Neoliberal Architectures of Culture, Commerce and Education', returns, in its analysis of Richard Rogers and Renzo Piano's Pompidou Centre, to an earlier period of cybernetic architecture. As a rare instance of a built project realized from this tendency in architecture, the Pompidou, I argue, stands as a significant precedent for more contemporary projects in which circulation is a central preoccupation. In this project,

manifestly informed both by cybernetics and a sympathy for the kind of ludic spatial practices and sensibilities that emerged from the events of May 68, circulation is conceived as a means of breaking down barriers, those between culture and its audiences in particular. Baudrillard's critique of the Pompidou is correct in its claim that the project recuperates the demands of May 68, answering calls for access, participation and informality by turning the museum into a hypermarket for the mass consumption of culture. He is less convincing, I suggest, in arguing that this project fails, that the masses inadvertently sabotage it, destroying culture and meaning in their rush to consume it. Following the analysis presented by Lyotard, in *The Postmodern Condition: A Report on Knowledge*, I explore how, within newly emerging and essentially cybernetic techniques of governmentality, the antagonisms that emerge from May 68 become the fuel for the refinement of its systems.¹⁷ Opposition to the system is answered not by repression but with its sublimation, through its incorporation within a system made more operationally effective by its inclusion. If the Pompidou can be seen, against its initial critical reception, as successful in these terms, it is because it contributes to the forging of a new subject position – the 'cultural consumer' – through its spatial articulation of circulation. Circulation is made productive, but also spectacular, as a visible affirmation of its enjoyments calculated to encourage the subject to step into its currents.

In the analysis of more contemporary projects that follows, I explore the role of an architecture of circulation in fashioning other hybrid and paradigmatically neoliberal subject positions, those of the 'citizen-consumer' and the 'student-entrepreneur'. Through the case of the Foreign Office Architects (FAO) Meydan Retail Complex in Istanbul, I explore the antagonisms between the needs of the disenfranchised poor of Istanbul and the private development of land for shopping malls, and how these are supposed to be resolved by projects such as FOA's in which spaces of consumption are to function, at the same time, as convivial public spaces. In the process I explicate the arguments of Zaera-Polo's essay 'The Politics of the Envelope' in order to contest his claims about the progressive nature of such projects, and so as to indicate the ways in which these effectively serve neoliberal techniques of governmentality.¹⁸ The position of the 'student-entrepreneur' is explored through the antagonisms produced in the marketization of higher education and the consequent subjection of students to conditions of indebtedness. Addressing the case of the New Academic Building designed for the Cooper Union school in New York by Morphosis, of the proliferation of 'hub' spaces in British universities, and focusing on FOA's Ravensbourne College building, I explore how these work to construct new subjects of education, how

the university is remade into a space for the practising of new entrepreneurial skills, dispositions and forms of conduct: the so-called 'learning landscape'.

The 'affective turn', and its relationship to both architecture and neoliberalism, is the focus of the book's sixth and final chapter, 'Neoliberalism and Affect: Architecture and the Patterning of Experience'. Against a critical tradition that stretches from Simmel, through Kracauer, Benjamin, Adorno, Baudrillard, and on to Jameson, in which the belief was that one could somehow grasp the larger abstract movements of capital – with architecture frequently the privileged site through which this might be achieved – the discourse of affect suggests that there is nothing to be analysed beyond material immediacy. The turn to affect is premised on the belief that there is nothing to interpret, no moment of cognition, only a feeling for matter. This, I argue, constitutes an essentially a 'pre-critical' turn. Tracing the affirmation of affect in the writings of Zaera-Polo, Moussavi, Lavin and Spuybroek, and the origins of their arguments in the work of Gilles Deleuze, Brian Massumi and others, I contest its insistence upon the immediacy of perception.

The tradition to which the affective turn opposes itself is concerned with critical reflection upon experience, with the possibility of grasping something of the 'totality' – social reality as an interrelated whole – through and from the outward forms that present themselves to the senses. This 'defetishizing critique', founded in the philosophy of Hegel, developed out of a resistance to the idea that the subject might be unconsciously manipulated through a purely sensory stimulation, controlled through a process of aestheticization. It is precisely this danger, I argue, that reappears in the assertions that sensory affect, in a contemporary architecture of immersive environments, liberates the subject from the unnecessary labour of cognition. The discourse of affect in architecture is entirely consonant with neoliberal models of the subject as necessarily ignorant, to the imperative that it give itself over to the trust of processes it cannot, itself, aspire to know or control, to processes rendered efficient and sensually appealing through the new architecture.

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Necessary Ignorance: The Art of Neoliberal Governmentality

David Harvey, in his *A Brief History of Neoliberalism*, claims that ‘neoliberalization was from the very beginning a project to achieve the restoration of class power’.¹ It is capital, with its logic of unconstrained accumulation and its agenda for the restoration of ‘class power’, that is decisive.² ‘The capitalist world’, says Harvey, ‘stumbled toward neoliberalization’ as the answer to its own question: ‘How were the conditions for the resumption of active capital accumulation to be restored?’³ Neoliberalism is granted little agency of its own. The kinds of knowledge it has produced, and its specificity as a particular form of capitalism, are given little consideration. In *Never Let a Serious Crisis Go to Waste: How Neoliberalism Survived the Financial Meltdown*, Philip Mirowski, in response, complains that Marxian approaches have failed to address what is distinctive in neoliberalism. Harvey, he says, ‘propounds the Marxist position that it is straightforwardly a class project masked by various versions of “free market” rhetoric. For him, the ideas are far less significant than the brute function of serving the interests of finance capital and globalized elites in the redistribution of wealth upward.’⁴

Pierre Dardot and Christian Laval share these concerns. In their *The New Way of the World: On Neoliberal Society*, they argue that neoliberalism ‘employs unprecedented techniques of power over conduct and subjectivities. It cannot be reduced to the spontaneous expansion of the commodity sphere and the field of capital accumulation.’⁵ Marxist readings of neoliberalism are ‘trapped in a conception that makes the “logic of capital” an autonomous motor of history, they reduce the latter to the sheer repetition of the same scenarios, with the same characters in new costumes and the same plots in new settings.’⁶ Against this, Dardot and Laval argue that capitalism does not progress according to an ‘implacable “natural law”’. It can encompass and admit of a ‘multiplicity of unique forms’. While neoliberalism is certainly a form of capitalism, it must, they say, be understood and analysed ‘in its irreducible specificity’.⁷

Foucault and governmentality

Dardot and Laval follow Foucault in formulating their analysis of neoliberalism as a specific form of capitalism possessed and productive of its own apparatus of power. Central to Foucault's analysis, in these terms, is the concept of governmentality foregrounded in later works such as *Security, Territory and Population* and *The Birth of Biopolitics*.⁸ In these his concerns turn from a more or less exclusive preoccupation with technologies of domination to a position more attentive to what he terms 'technologies of the self'. As he writes in the essay 'Technologies of the Self', the 'encounter between the technologies of domination of others and those of the self I call "governmentality"'.⁹ Here Foucault's agenda shifts from questions of how individuals are subjugated by power to ones of how subjectivity is actively produced. 'Governmentality', as Thomas Lemke elaborates, conceptually unites 'technologies of the self with technologies of domination', and forms a semantic link between 'governing ("gouverner") and modes of thought ("mentalité")'.¹⁰

In turning from questions of disciplinary power and its centralized, regulatory practices to other forms of governmentality – integrative, continuous, immersive – Foucault sought to understand how non-disciplinary apparatuses of power operated, especially those of neoliberalism. In *The Birth of Biopolitics* he argues that 'American neo-liberalism involves ... the generalization of the economic form of the market. It involves generalizing it throughout the social body and including the whole of the social system not usually conducted through or sanctioned by monetary exchanges'.¹¹ In neoliberalism, the market, its form and logic now coextensive with society as whole, becomes itself a mode of governmentality, an environmental apparatus working to produce the mentalities and dispositions conducive to its continued operation.

Dardot and Laval draw on Foucault's account of governmentality to counter orthodox Marxian perspectives on the emergence of neoliberalism. They argue that the claims made by Harvey, and others, that neoliberalism is adopted by capitalism to solve its crises of accumulation in the 1960s and 1970s are shortsighted, failing to comprehend that neoliberalism serves as a particular mode of power invested in 'controlling the population and directing its conduct'.¹² 'Neoliberalism', they write, 'does not only respond to a crisis of accumulation: it responds to a crisis of governmentality'.¹³

This crisis of governmentality concerns the capacity of the state in this period to direct an effectively functioning capitalist economy while, at the same time, maintaining a democratic social order based on the planning, administration

and provision of public services, welfare and employment. The neoliberal answer to this crisis, simply, is that the market economy take on the function of ordering society – the ‘market order’ – and that the state is reassigned to a role facilitating the operation of the market through the construction of policies and frameworks. A new and beneficent principle of social order will be established through the very same economic principles of free competition that serve as the basis for the accumulation of capital. For neoliberalism the market is not the object of a policy of *laissez-faire*, but, instead, the very mechanism through which the social order is maintained. As Foucault writes:

The problem of neo-liberalism is ... how the overall exercise of political power can be modelled on the principles of a market economy. So it is not a question of freeing an empty space, but of taking the formal principles of a market economy and referring and relating them to, of projecting them on to a general art of government.¹⁴

Foucault’s assessment of what is distinctive about neoliberalism is confirmed in the writings of its key thinkers. Milton Friedman, for instance, said of the differences between nineteenth-century liberalism and twentieth-century neoliberalism:

In place of the nineteenth century understanding that *laissez-faire* is the means to achieve [the goal of individual freedom], neoliberalism proposes that it is competition that will lead the way. ... The state will police the system, it will establish the conditions favorable to competition and prevent monopoly, it will provide a stable monetary framework, and relieve acute poverty and distress. Citizens will be protected against the state, since there exists a free private market, and the competition will protect them from one another.¹⁵

Central to this market-based ‘art of government’, as implied in Friedman’s remarks, is the question of how it will ‘take care’ of the citizen. Foucault’s studies of these matters, of the production of subjectivity and of the ‘techniques of the self’, are integral to his understanding of the mechanisms of governmentality. His concern with the production of subjectivity, as Sven-Olov Wallenstein notes, was ‘meant to displace or circumvent the transcendental claims about subjecthood inherited from the tradition of Descartes, Kant and Husserl’.¹⁶ It was also meant to challenge naïve conceptions of alienation, human nature and liberation. In one of his last interviews Foucault remarked:

I have always been somewhat suspicious of the notion of liberation, because if it is not treated with precautions and within certain limits, one runs the risk

of falling back on the idea that there exists a human nature or base that, as a consequence of certain historical, economic, and social processes, has been concealed, alienated, or imprisoned in and by mechanisms of repression. According to this hypothesis, all that is required is to break the repressive deadlock and man will be reconciled with himself, rediscover his nature or regain contact with his origin, and reestablish a full and positive relationship with himself.¹⁷

The subject is never given in advance of or apart from historically specific conditions. As Foucault says in the same interview, 'I had to reject a priori theories of the subject in order to analyze the relationships that may exist between the constitution of the subject and games of truth, practices of power, and so on.'¹⁸

Foucault pursued his interest in techniques of the self in the contexts of their practice in the worlds of ancient Greece and Rome, published, respectively, as *The Use of Pleasure* and *The Care of the Self*.¹⁹ In these works, and in *The Government of Self and Others* (the title of his lecture series at the Collège de France in 1982–3), Foucault explored how the 'care of the self' served as an ethical imperative within Greco-Roman culture and philosophy.²⁰ Consisting of practices such as meditation, prayer, writing and collective ritual, Foucault conceived of the 'care of the self' as an art of self-governance and self-mastery. Its techniques served to guard against the enslavement of the self by 'desires, appetites and fears', and against making slaves of others, who must also, ethically, be at liberty to care for themselves.²¹ 'The risk of dominating others and exercising a tyrannical power over them', Foucault says, 'arises precisely only when one has not taken care of the self and has become the slave of one's desires.'²² The care of the self demands 'extensive work by the self on the self', and this work centres on the cultivation of an 'ethos that is good, beautiful, honorable, estimable, memorable, and exemplary'.²³ For Foucault there is nothing innately 'bad' about governmentality. It can, as he shows in his studies of Greco-Roman culture, serve as a 'practice of freedom'. It is impossible to have society without power: 'Power is not evil. Power is games of strategy.'²⁴ The point is 'to play these games of power with as little domination as possible'.²⁵

Neoliberalism, human capital and the entrepreneurial self

Foucault's *Birth of Biopolitics* – chiefly concerned in fact with the birth of neoliberalism – came before his final works on governmentality and does

not directly address ‘the care of the self’. But he is, in these lectures, evidently concerned with the ways in which neoliberalism is engaged in the production of subjectivity and in the art of government. Focusing on the ideas of German ordoliberals such as Wilhelm Röpke and Alexander Rüstow, he considers how, in the aftermath of Nazism, they were concerned to fully incorporate the subject within capital. Rather than being at the mercy of the economy (as in pre-war Germany), and consequently at risk of being alienated from it, the subject should feel at one with the market, embedded within and nurtured by its multiple enterprises. This proposition was premised on a model of the self as an essentially entrepreneurial being. As Foucault says of the ordoliberal perspective on the subject and its relation to the market:

The individual’s life must be lodged, not within a framework of a big enterprise like the firm or, if it comes to it, the state, but within the framework of a multiplicity of diverse enterprises connected up to and entangled with each other, enterprises which are in some way ready to hand for the individual, sufficiently limited in their scale for the individual’s actions, decisions, and choices to have meaningful and perceptible effects, and numerous enough for him not to be dependent on one alone. And finally, the individual’s life itself – with his relationships to his private property, for example, with his family, household, insurance, and retirement – must make him into a sort of permanent and multiple enterprise.²⁶

Neoliberalism is not a disciplinary power. It does not aim to confine or segregate subjects or attempt to impose normative standards of conduct and behaviour. Foucault’s understanding of the neoliberal governmentality of the self corresponds with neoliberalism’s own perspectives on how power should, in the interest of liberty, operate: not through the vertical application of external force but horizontally and immanently. The individual is modelled as innately adaptable and responsive to these horizontal relations. Adjusting its conduct and behaviour to the ever-evolving conditions of the market, it will exercise and realize its liberty.

The historical development of neoliberalism represents, in contemporary form, one of those periodic returns to the question of the self and its care that Foucault attends to in his later work. From the aftermath of fascism and the fear of communism, the self and its care, reappear in a discourse about the subject and its relations with others. Neoliberal thought, however, does not afford the individual subject the kind of ‘autonomy’ that Foucault claims to find within Greco-Roman practices of the self.²⁷ When neoliberalism rediscovers the care of

the self, it is not to reduce domination to 'as little as possible' but to legitimate and extend its reach. The care of the self is not undertaken for the self, as a 'practice of freedom', but in order to maintain the economic order. The 'work on the self by the self' is not an autonomous practice, but one demanded by the conduct of the market to which the subject must accommodate and continually adapt itself. We must, in neoliberalism, give ourselves over to the care of the market.

Neoliberalism 'moves over to the side of the subject' only to the extent that it concerns itself with the cultivation of an economic ethos: 'The subject is considered only as *homo oeconomicus*, which does not mean that the whole subject is considered as *homo oeconomicus* It simply means that economic behavior is the grid of intelligibility one will adopt on the behavior of a new individual.'²⁸ Gary Becker, for instance, employed this 'grid of intelligibility' to conceive of the conduct, habits, education and care of the self as 'investments' in 'human capital': 'Tangible forms of capital are not the only type of capital. Schooling, a computer training course, expenditures on medical care, and lectures on the virtues of punctuality and honesty are also capital. That is because they raise earnings, improve health, or add to a person's good habits over much of his lifetime.'²⁹

The self becomes 'governmentalizable' in neoliberalism, says Foucault, as an economic subject. The *homo oeconomicus* who 'responds systematically to modifications in the variables of the environment, appears precisely as someone manageable.'³⁰ The subject can be managed through the economic processes to which its existence is made immanent, and the very fact of its adaptability renders it amenable to an art of *economic* governmentality. Recursively, the adaptability of the self demanded by neoliberalism is represented as a sign of emancipatory self-transformation. As Mirowski observes:

Time and again, the supposed success of some teen idol or hedge fund manager or sports star is said to illustrate the tired platitude that 'you can be anything that you want to be, if you want it bad enough'. This presumes a self that can incorporate any attribute, take up any challenge, transcend any limitation and embody any quality.³¹

Foucault understood that Greco-Roman practices of the self had as their object the salvation of the human soul. Neoliberalism has been no less ambitious in its objectives. In an interview for the *Sunday Times* in 1981 Margaret Thatcher stated: 'Economies are the method. The object is to change the soul.'³² This objective has

been served by a carefully constructed apparatus of knowledge founded upon, and legitimized by, a claim about the 'necessary ignorance' of the subject.

Hayek, Polanyi and cybernetics

The proposition that human individuals can have little knowledge of the world in which they live is fundamental to neoliberalism. The world is too complex and the perspective of the individual too limited to grasp its workings, let alone to presume to direct these. Hayek, in *The Constitution of Liberty*, states that the primary requisite for understanding society is that 'we become aware of men's necessary ignorance of much that helps him to achieve his aims'.³³ In *Law, Legislation and Liberty*, he writes of 'the fact of the necessary and irremediable ignorance on everyone's part of most of the particular facts which determine the actions of all the several members of human society'.³⁴ According to Hayek we cannot and need not be aware of the rules that govern our social order. These rules – the 'natural laws' of traditions, institutions, customs and conduct – have evolved over the course of time without ever having been the products of conscious design by human minds. Hayek considers it an error – 'rationalist' and 'anthropomorphic' – to 'ascribe the origins of all institutions of culture to invention or design'.³⁵ Far from circumscribing individual freedom, the evolutionary nature of the social order is, argues Hayek, the very basis of that freedom: 'Liberty is essential in order to leave room for the unforeseeable and unpredictable'.³⁶ The 'unforeseen' and the 'unpredictable' are, within neoliberal thought, the necessary conditions for the experience of freedom and the possibility of progress. 'The advance and even the preservation of civilization,' writes Hayek in *The Constitution of Liberty*, 'are dependent upon a maximum of opportunity for accidents to happen'.³⁷

Necessary ignorance of the social order disqualifies us from making conscious plans for its progress. It is from the kind of 'conscious planning' practised by a rationalist approach to social progress that, argues Hayek, 'all modern socialism, planning and totalitarianism derives'.³⁸ Planning can in fact only result in tyranny. The totality of the social order cannot be grasped, and any state that sets out to control and direct this order, even a democratic one, has set itself on the path towards totalitarianism. As Foucault noted in *The Birth of Biopolitics*, German ordoliberals directly equated the Keynesian-inspired policies of the post-war British government with the fascism it had recently

fought against. Foucault records the essence of Wilhelm Röpke's attack on the foundation of the welfare state as follows: 'What you are preparing for yourselves with your Beveridge plan is quite simply Nazism. On one side you battle with the Germans militarily, but economically, and so politically, you are in the process of repeating their lessons. English Labour party socialism will lead you to German-style Nazism.'³⁹ In *The Road to Serfdom* Hayek writes:

Planning leads to dictatorship because dictatorship is the most effective instrument of coercion and the enforcement of ideals, and as such essential if central planning on a large scale is to be possible. ... A true 'dictatorship of the proletariat', even if democratic in form, if it undertook centrally to direct the economic system, would probably destroy personal freedom as completely as any autocracy has ever done.⁴⁰

The cause of human liberty cannot be served by an anthropocentric rationality. There can be no collective project for changing the world. Common purpose and solidarity, says Hayek, are tribal throwbacks that constitute the greatest threat to a 'free civilization.'⁴¹ Logically and ethically disqualified from presuming to grasp the totality of the social order, humans are supposed to submit to the superior organizational capacities of the market, to individual competition rather than to collective solidarity, as the guarantor of their liberty. As Foucault notes, 'Economic rationality is not only surrounded by, but founded on the unknowability of the totality of the process.'⁴²

There is something like an inversion of Immanuel Kant's 'Copernican revolution' at work in the neoliberal truth game. Instead of 'conforming' to *our* knowledge, the world demands that we submit to the innate 'knowledge' of the market, to *its* capacity to spontaneously order our lives and facilitate our freedoms. The true gravitational centre of social agency, supposed to be mistakenly ascribed to the perspective of the subject, is located in the competitive order of the economic market and its unplanned evolution. Kant saw the Enlightenment as the 'age of criticism, to which everything must be subjected', identifying critique as central to its.⁴³ Neoliberal thought effectively denies the very possibility of the critically reflective subject. Its own critical reasoning rescinded, the subject is itself to be subjected to the reason of the market, a milieu to whose evolutionary development it must continually adapt. As Hayek asserts in *The Constitution of Liberty*, 'Man did not simply impose upon the world a pattern created by his mind. His mind is itself a system that constantly changes as a result of his endeavour to adapt himself to his surroundings.'⁴⁴ These surroundings are primarily those of the market and its order, as figured by Hayek, is spontaneous.

Spontaneous orders and complex systems

Hayek drew extensively upon thinkers of the Scottish Enlightenment – Adam Smith, David Hume and Adam Ferguson – in formulating the notion of a ‘spontaneous order’. He found Ferguson, in particular, useful in legitimating his arguments against the capacity of the state to consciously direct societal development. In *Law, Legislation and Liberty*, Hayek employs a line from Ferguson’s *An Essay on the History of Civil Society* to underscore his point: ‘Nations stumble upon establishments, which are indeed the result of human action, but not the execution of any human design.’⁴⁵ Michael Polanyi, to whose thought Hayek was deeply indebted, likewise located the origin of the idea of a spontaneous order – often also referring to this as a ‘polycentric order’ – in the Scottish Enlightenment. Adam Smith presented Polanyi with a model of the market as exemplary of a spontaneous order. ‘The most massive example of spontaneous order in society’, he wrote in *The Logic of Liberty*, ‘the prototype of order established by an “invisible hand” – is that of economic life based on an aggregate of competing individuals.’⁴⁶ The logic of the spontaneous order guarantees liberty since, as exemplified in the polycentric medium of the market, it is achieved without the exercise of an external power. In the economic market, he writes, ‘Each consumer adjusts his purchases to the ruling price, which he affects in his turn by his purchases.’⁴⁷ The mutually coordinating activities of individuals ‘exercising their initiative’ in their dealings with the market are ‘free, for they are not determined by any *specific* command, whether of a superior or of a public authority; the compulsion to which they are subject is impersonal and general.’⁴⁸

Beyond the focus on the market as a prototypically spontaneous order, Polanyi is also occupied, in *The Logic of Liberty*, with extending the reach of this model into other fields, such as those of science and intellectual culture.⁴⁹ He finds the logic of the spontaneous order operating in the ‘co-ordinative principle of science’, since it ‘consists in the adjustment of each scientist’s activities to the results hitherto achieved by others’, and demonstrates the ‘co-ordination of individual activities without the intervention of any co-ordinating authority’.⁵⁰ He finds the same logic at work in the way fluids and gases spontaneously respond to their environmental conditions, in the formation of crystals, and in ‘the growth and form of plants and animals.’⁵¹ In *The Constitution of Liberty*, Hayek follows Polanyi’s lead in asserting a scientific basis for the spontaneously occurring organizational properties of the market – the game of ‘catallaxy’, as Hayek termed it.⁵² ‘We could never produce a crystal or a

complex organisational compound', he writes, 'if we had to place each individual molecule or atom in the appropriate place in relation to the others.'⁵³ It follows for Hayek that what goes for physics must go for society. 'As in nature', he says, we cannot arrange its elements or design its order, we can 'merely ... create conditions in which an orderly arrangement can establish and ever renew itself'.⁵⁴

Analogical leaps of this kind – from the spontaneous ordering of the physical and natural worlds to that of social and economic ones – were premised on the grounds of their supposed equivalence as complex systems. Precisely because of their complexity, these kinds of systems, maintain Polanyi and Hayek, cannot be arranged from the outside, or ordered from a centre. They can only be ordered, spontaneously and immanently, through the mutual interaction and coordination of their elements. 'The rules that govern the actions of the elements of such spontaneous orders', writes Hayek, 'need not be rules which are "known" to these elements; it is sufficient that the elements actually behave in a manner which can be described by such rules.'⁵⁵ Hayek further developed his conception of spontaneous orders and complex systems through his associations with figures such as the mathematicians John von Neumann and Warren Weaver, and the biologist Ludwig von Bertalanffy. Hayek drew, for instance, upon von Neumann's account of the 'logic of automata' – with its analyses of the operations of self-regulation, information processing and the evolution of simple elements into complex systems – to develop his own explanations of evolutionarily and endogenously ordered systems. That von Neumann held that these systemic operations always functioned in the same fashion, whether within thermodynamics, computation or the human brain, also furnished Hayek with the kind of unifying model that could comfortably traverse natural, social and economic orders.

In the essay 'Degrees of Complexity', first published in 1955, Hayek argues for the methodological advantages of theories of 'organized complexity' over those of classical physics.⁵⁶ Drawing on the work of Bertalanffy, and especially Weaver (who also advised Hayek on the preparation of the essay), he claims that the traditional methods of physics lack 'universal applicability'.⁵⁷ These methods may work for the analysis of 'closed systems', ones composed of a limited number of observable and controllable elements, but they are ill equipped to deal with questions of organized complexity. The progress of fields addressing complex systems, such as the biological, social and economic sciences, suggests to Hayek the advanced path of scientific method.

When dealing with instances of complex systems we cannot expect to comprehend or predict their specific behaviour. The explanatory power of

theories of complexity lies in their capacity to identify the kind of outcomes we might expect of certain systems on identifying their type. Hayek writes: 'It seems indeed not improbable that, as the advance of the sciences penetrates further and further into more complex phenomena, theories which merely provide explanations of the principle, or which merely describe a range of phenomena which certain types of structures are able to produce, may become more the rule than the exception.'⁵⁸ In place of particular knowledge the sciences can aspire only to 'the ready perception of patterns of configurations' familiar from the observation of complex systems across a number of fields. 'The possession of such a ready-made pattern of significant relationships', argues Hayek, 'gives us a sort of sense for the physiognomy of events which will guide us in our observation of the environment.'⁵⁹ Rather than the kind of precise knowledge that would equip us to act directly upon complex orders, and shape them to certain ends, we can perceive them only as phenomena that impinge on our senses in familiar configurations through a process of 'pattern recognition'. According to Hayek we can never hope to know or reflect upon the rules upon which complex orders operate, and this is not least because the human mind attempting to understand them is itself a type of complex order of which we can only have limited knowledge.⁶⁰ Writes Hayek in 'Rules, Perception and Intelligibility', 'Conscious thought must be assumed to be directed by rules which in turn cannot be conscious – by a supra-conscious mechanism which operates upon the contents of consciousness but which cannot itself be conscious.'⁶¹ We do not and cannot know our own minds. It also turns out, in a further analogical manoeuvre, that the mind is made to serve as the model of the market which is itself, paradoxically, supposed to be the prototype of a spontaneous order. As Mirowski states, for Hayek 'the "market" is posited to be an information processor more powerful than any human brain, but essentially patterned upon brain/computation metaphors.' It is this account of the market, continues Mirowski, that has become the most culturally dominant, the 'most closely associated with the neoliberal *Weltanschauung*.'⁶²

In *Law, Legislation and Liberty*, Hayek writes that 'the only possibility of transcending the capacity of individual minds is to rely on those super-personal "self-organizing" forces which create spontaneous order.'⁶³ Taking it as read that the type of spontaneous order with which individual minds are going to be most engaged with, from Hayek's perspective, is that of the market; this statement stands as a further iteration of one of his central arguments: human progress is only possible where the subject conforms to the self-organizing and evolutionary logic of the market. Since human minds and economic markets alike are complex

orders, they can be integrated. But since the market is possessed of superior self-organizing and evolutionary powers, because it is a 'super-personal' force, it would be to the advantage of human subjects to adapt themselves to the operations of the economic order, to deliver themselves into its care.

In Hayek's concerns with systemic regulation and integration, with information and pattern recognition, his debts to the cybernetics of Heinz von Foerster and Norbert Wiener are made plain. In *Law, Legislation and Liberty*, he enthuses over the emergence of cybernetics as 'a special discipline which is also concerned with what are called self-organizing or self-generating systems'.⁶⁴ He employs cybernetics to rationalize the mechanisms of adaptability on which neoliberal truths are premised: 'The process of adaptation operates, as do the adjustments of any self-organizing system, by what cybernetics has taught us to call negative feedback.'⁶⁵

Wiener had derived the term 'cybernetics' from the Greek word *kubernētēs*, meaning 'steersman', noting that this, in turn, is also the source of the word 'governor'.⁶⁶ In his *Cybernetics*, Norbert Wiener wrote: 'We have decided to call the entire field of control and communication theory, whether in the machine or in the animal, by the name Cybernetics.'⁶⁷ In *The Human use of Human Beings*, Weiner elaborated:

There is a larger field which includes not only the study of language but the study of messages as a means of controlling machinery and society, the development of computing machines and other such automata, certain reflections upon psychology and the nervous system, and a tentative new theory of scientific method.⁶⁸

Cybernetics promised to unify these different fields by conceiving of them all as information processing systems. The different components of these systems – man, machine and society – could now speak to each other in a common language.

Cybernetics furnishes Hayek with further legitimation for his arguments. Individuals are conceived of according to unifying models that situate them as integral components of larger systems within which they cannot hope to exercise any degree of autonomous control, let alone critical reflection. The subject, possessed only of the capacity for information processing and pattern recognition, functions as a relay within the larger and superior processual order of the market. This is to the advantage of the subject since liberty and progress are dependent upon its integration within a spontaneous order. This order serves, at the same time, as an immanent mode of self-governance in which we are to be 'guided by habit rather than reflection'.⁶⁹

The unifying perspectives to which neoliberal thought has attached itself have equipped it, through the technique of analogy, to transfer its model of the economic market to fields of knowledge and practice spanning the worlds of work, education, health, politics, ecology, welfare, management and design. Its discourse now resides in these and other domains as an almost unquestioned and unquestionable orthodoxy. As Mirowski writes, neoliberalism has ‘become a comprehensive worldview.’⁷⁰ Adaptability and flexibility appear, through the neoliberal lens, as the qualities of conduct, the ethos that the subject must cultivate in order to thrive in the competitive environment of the market. According to the truth games of neoliberalism there is no choice for the self, politically or ontologically, but to govern itself, and to have itself governed, according to these imperatives.

Neoliberalism as the ‘form of our existence’

Far from simply playing out the ‘logic of capital’, neoliberalism is productive of certain ways of thinking about the very nature of the subject and its relation to the economic market. Its truths have so thoroughly permeated the world as to substantially shape the conception and experience of selfhood as an essentially productive and adaptable enterprise. Foucault’s perspective on the concern of neoliberal thought with the production of subjectivity and the legitimating functions of truth games have turned out to be prescient insights into our contemporary condition. As Dardot and Laval write, ‘At stake in neo-liberalism is nothing more, nor less, than the *form of our existence* – the way in which we are led to conduct ourselves, to relate to others and to ourselves.’⁷¹

According to neoliberalism’s own account of the order of things, though, this conduct cannot be disciplined into the subject from without, and certainly not under the corrective authority of some external power always readily identifiable as ‘neoliberal’. The ethos of neoliberalism is to be shaped in the subject through its encounters with the order of its environment and the apparently immanent and unmediated demands this places upon it to be pliant, productive and competitive. These encounters, in turn, take place through specific practices and techniques, in particular times and places, that typically appear to have nothing to do with neoliberalism. This is the case in a particular ‘spacing’ of the subject, developed in the second half of the twentieth century, that derived from the post-war artistic avant-garde, the counterculture of the 1960s and 1970s, new models of management and early developments in personal computing. The

construction of new relationships between the subject and its environment was supposed to promise the experience of liberation. In effect, and sometimes by design, though, the new environmental spacing of the subject had a good deal in common with the tenets and agendas of neoliberalism. It has also come to constitute a certain doxa through which architectural culture has, of late, staked its claims to being progressive.

The Spatial Constitution of the Neoliberal Subject

Arranged on a domestic shelving unit are animal skulls, bird's eggs and geometric models. There are diagrams of cellular structures, X-rays, microscopic images of organisms and telescopic photographs of galaxies. Richard Hamilton's exhibition *Growth and Form*, held in 1951 at the Institute of Contemporary Art (ICA) in London, comprises a seemingly disparate array of images and objects. Immersed in the atmospherically lit environment of this installation, its visitors are, though, supposed to seize upon the unity underlying the leaps in scale and subject matter. As their attention passes between the items tabulated in its displays, common patterns should appear. Following the thesis of the book that inspired Hamilton's exhibition – D'Arcy Wentworth Thompson's *On Growth and Form* – these are to be understood as expressions of the mathematical laws that universally govern the growth of forms.¹

Hamilton, Pollock and Kaprow

On Growth and Form, first published in 1917, has been described by Stephen Jay Gould as a 'hybrid theory of Pythagoras and Newton [that] argues that physical forces shape organisms directly'.² Thompson himself understood the book as a 'physico-mathematical or dynamical investigation into morphology',³ a search for the 'community of principles' and the 'essential similitudes' of the 'organic and inorganic', the 'animate and inanimate'.⁴ These 'essential similitudes' extended from physics to chemistry, biology and engineering, and were illustrated with a variety of equations, diagrams, drawings and photographs that invited the readers of *On Growth and Form* to recognize, through its visual rhetoric, the universality of the morphological rules to which these fields were all subject.

On Growth and Form had already had some impact within avant-garde circles before the time of Hamilton's exhibition. It had been cited, for instance, by László Moholy-Nagy in his *Vision and Motion* of 1947. Hamilton's take on Thompson's work, though, was original in its focus on the challenge it presented to conventional artistic practices. Planning the exhibition *Growth and Form* in 1950 he wrote:

The initial stimulus for the proposed exhibition was provided by Thompson's book *On Growth and Form*. The visual interest of this field, where biology, chemistry, physics and mathematics overlap was considered an excellent subject for presentation in purely visual terms. The laws of growth and form pertaining to the processes of nature are quite contrary to the processes of artistic creation. However complex the form ... it is the result of very precise physical laws; the complexities of art, on the other hand, are the products of involved psychological processes.⁵

Hamilton contrasts the lawful rules of morphology accessible to science to the wilful drives of artistic creation. The latter appears to him disadvantaged and inadequate. As an expression of 'psychological' factors its meaning will necessarily lack clarity and immediacy. 'Cleansed by science', comments Isabelle Moffat, the kind of forms that feature in Thompson's book and Hamilton's exhibition, 'are free of any connotative meanings and guarantee a kind of directness that [Hamilton] sought also to translate his art'.⁶

In respect of its affirmation of 'natural laws', Thompson's book has been similarly significant in the construction of a certain rhetoric of contemporary architecture, particularly where this touches upon ideas of morphological 'emergence' and 'elegance'. 'We must search for the principles and dynamics of organisation and interaction, for the mathematical laws that natural systems obey and that can be utilised by artificially constructed systems,' writes Michael Weinstock in an essay titled 'Morphogenesis and the Mathematics of Emergence'.⁷ Patrik Schumacher, appealing to the 'laws of nature', has argued that the morphologies of Zaha Hadid's architecture derive from 'the forms and spaces we perceive in natural systems, where all forms are the result of lawfully interacting forces'.⁸

The ways in which Hamilton chose to make Thompson's ideas sensible to the visitors of his *Growth and Form* installation also foreshadow the 'post-linguistic' and 'affective' turns lately influential in architecture. Hamilton favoured an exclusively visual language in communicating Thompson's theorems and there are, at his insistence, no textual clues of any kind to guide the visitor's

interpretation of the work.⁹ Interpretation is, in fact, effectively displaced from the scene of *Growth and Form* so as to facilitate more immediate forms of perception, that is, isomorphic pattern recognition and the registration of affect.

Hamilton's concerns with perceptual immediacy, for dispensing with the ambiguities of semantic connotation, were shared by others associated, like him, with the Independent Group (IG) based at the ICA. The interest this group – comprised of Reyner Banham, Eduardo Paolozzi, Nigel Henderson, Lawrence Alloway, John McHale, Hamilton and others – expressed in popular and so-called mass culture hardly needs recounting, but their concern with the new modes of perception made possible through mass media technologies is worth re-emphasizing. Television, cinema and advertising suggested to them more direct and efficient means of communication than those of the art gallery. Rather than contemplative encounters, *Growth and Form*, and other IG shows – *Parallel of Life & Art* (1953), *Man, Machine & Motion* (1955), *This is Tomorrow* (1956) – were geared towards the creation of immersive conditions. The space of the gallery, it was believed, upheld culturally engrained dispositions in the perception and reception of art. It sustained a respectful distance between viewer and artwork and maintained contemplative habits in perception. The space of the installation, though, suggested a condition of environmental immediacy. Lawrence Alloway even claimed that the mass media that served as the model for these shows already constituted a 'natural environment'.¹⁰

The possibilities of this type of all-encompassing experiential condition had first been explored in the 1920s and 1930s within the European avant-garde. As Fred Turner points out in his *The Democratic Surround*, practices in designing immersive exhibition spaces first developed at the Bauhaus, and elsewhere, were later transported into an America concerned with the making of the 'democratic personality' during and after the Second World War.¹¹ Exhibitions such as *Road to Victory* (1943) and *The Family of Man* (1955), both held at the Museum of Modern Art in New York, drew upon practices and techniques first developed by Moholy-Nagy in order to envelope the subject's field of vision, such as suspending images from ceilings and placing them below conventional sight lines. Such exhibitions were, however, also concerned with shaping thoughts and beliefs through argumentation and narrative. They were premised on the conveyance of ideas articulated through text and image together. Exhibitions such as *Growth and Form*, *Man Machine and Motion* and *This is Tomorrow*, however, operated according to very different principles of perception.

The American projects described by Turner as 'democratic surrounds' called upon the visitor to arrive at pre-inscribed meanings for which images, objects

and texts were only the medium. They required interpretation. They solicited antipathy for dictatorship, racism and inequality, and they cultivated the affirmation of humanist and democratic beliefs. They sought, in effect, to align the subject's moral and political compass with a set of predetermined principles. The exhibitions staged by the IG, in contrast, operated according to a more closed-circuit model of communication. Located in the 'natural environments' of these shows images and objects were supposed to speak directly for and about themselves. Rather than offered up for intellectual judgement or critical interpretation, they could be perceived through a purely immanent logic of information and its patterning. Influenced by the 'non-Aristotelian' principles of categorization exemplified, for them, by the Dadaists, the IG equalized high art, mass culture, science, technology and nature within a continuum accessible to immediate visual experience.¹² Influenced by the mathematics of von Neumann and the information theory of Claude Shannon, they understood communication as a source-to-destination process in which the information itself was value-neutral. As Hamilton said, reflecting on the formative influence of Shannon's theories, 'The idea that you can express everything with something as simple as ones and zeros, and that value judgments don't count – you can't say this is good and this is bad – means you're in another kind of space altogether.'¹³ This 'other kind of space', as developed by the IG, served as a kind of milieu in which the human animal would adapt itself to its new informational *umwelt*; a space in which the sensorium could be trained in techniques of associative and analogical perception, and where the old habits of judgement and interpretation could be relinquished.

In the development of these spaces and experiences, and in the formulation of the ideas of information, perception and order on which these were premised, the IG occupied common ground with the neoliberal thought of Polanyi and Hayek. The significance to both parties of figures such as Wiener, Bertalanffy, von Neumann, Shannon and Weaver shows in their mutual concerns with what Hayek termed the 'physiognomy of events which will guide us in our observation of the environment', and with the natural laws supposed to govern their appearance.¹⁴ The natural and spontaneous order that produces Hayek's 'ready-made pattern of significant relationships' is made sensible in the Duchampian 'readymades' Hamilton assembles in *Growth and Form*. Since everything develops according to an evolutionary logic over which the individual has no control, there is no purpose in signalling to the subject of the environment anything beyond immediate impressions, and no point in trying to interpret these. Things are as they are, 'as found', and we need only

acclimatize ourselves – as a species of post-political animal – to the latest techno-informational and mass-mediated stage of their evolution.

American avant-garde and countercultural practices of the 1960s and 1970s were similarly invested in an environmental spacing of the subject, but pushed its implications further. Environments – natural, technological, architectural, pharmaceutical, communal – figured as new realms of personal liberation. They suggested escape routes from bureaucracy and promised liberation within a cosmic order of infinite connectivity, the realization of a Zen-like state of oneness.

Allan Kaprow's essay, 'The Legacy of Jackson Pollock', written in 1958, reads as a founding statement of the concerns that would subsequently occupy the American avant-garde, as well as much of the counterculture. Kaprow laments Pollock's passing, two years earlier, since 'it came at the wrong time'.¹⁵ Pollock, he argued, had been on the threshold of destroying painting as it been practised and understood since the time of the ancient Greeks. His large 'drip' paintings, in the manner of their execution and in the experience they presented to the viewer, were poised on the cusp of 'a return to the point where art was more actively involved in ritual, magic, and life than we have known it in our recent past'.¹⁶ The scale of Pollock's works, and the sense of potentially infinite expansion conveyed in their 'skein of lines and splashings', suggested that they 'ceased to become paintings and became environments'.¹⁷ It was this possibility that Kaprow wanted to pursue, through the form of the 'Happening', to the point where 'we must become preoccupied and dazzled by the spaces and objects of our everyday life'.¹⁸

For Kaprow, one of the originators of this art form, the significance of the Happening hinged on its capacity to dissolve all boundaries between individual and environment. In an essay of 1961, 'Happenings in the New York Scene', he wrote:

The sheer rawness of the out-of-doors ... in which the radical Happenings flourish is more appropriate, I believe, in temperament and un-artiness, to the materials and directness of these works. The place where anything grows up ... its 'habitat', gives to it not only a space, a set of relationships to the various things around it, and a range of values, but an overall atmosphere as well, which penetrates it and whoever experiences it ... art approaches a fragile but marvelous life, one that maintains itself by a mere thread, melting the surroundings, the artist, the work, and everyone who comes to it in an elusive, changeable configuration.¹⁹

Kaprow, referring to an exhibition of his own work, wrote that 'we do not come to look *at* things. We simply enter, are surrounded, and become part of what surrounds us'.²⁰ Affirming the absorption of the subject within the artwork

as habitat, Kaprow's position was close to that of the IG. It focused upon the immediate perception of the everyday world and its 'physiognomy of events'. Being absorbed in the immediate experience of one's habitat, 'preoccupied and dazzled' by its 'ready-made patterns' in the form of the art installation or the Happening, however, necessarily precludes intellectual and conceptual reflection on the artwork. Experience is constricted to what Kant described, in his *Critique of Pure Reason*, as 'merely a rhapsody of perceptions', never amounting in itself to a condition of knowledge.²¹ While perception is expanded – beyond the picture frame and the space of the gallery – thought is confined in a fashion perfectly consonant with neoliberal epistemologies of 'necessary ignorance'. We do not gain knowledge of the world through experience in order to conceive of acting to change it, but can, at best, only intuit an order of such complexity that it would be sheer hubris to contemplate its rational comprehension or control.

In light of this renunciation of knowledge, the expansion of perception serves a compensatory function; a pay-off for the absence of individual agency glossed as a pseudo-religious experience. This, at least, is how Kaprow understands the promise of Pollock. In Pollock's paintings, he writes, 'The artist, the spectator, and the outer world are ... interchangeably involved.'²² The painter could be said to be 'in' his work at the moment of its creation, steeped in a delirium of 'automatic' gestures from which any trace of conscience crafting or 'artfulness' had disappeared. The form of his paintings, in turn, allowed the viewer 'equal pleasure in participating in a delirium, a deadening of the reasoning faculties, a loss of "self" in the Western sense of the term.'²³ Kaprow presented Pollock's achievement as Zen-like: a 'combination of extreme individuality and selflessness.'²⁴ Understanding 'selflessness' in this context as the relinquishing of the rational self, the self that maintains a distance – interpretative, critical, reflective – from the objects of its perception, the 'combination of extreme individuality and selflessness' might also stand as a motto for the imperatives of neoliberalism. The subject must fashion its individuality from whatever resources it can grasp from within the systems of circuits, networks and exchanges it inhabits, but this individuality must be outsourced, redistributed and recirculated, within those same systems, in order to be valorized.

THX 1138 and Alphaville

All forms of totalitarianism, fascist and communist, appear antithetical to this process of subjectification since they threaten to subsume the individual to

a social order of abstract ideals and bureaucratic plans. Such anxieties about totalitarianism emerged, understandably enough, from the experiences of the Second World War, but they also came to resonate with Cold War-era paranoia of the 'Red Menace' of communism. They were also fuelled, for the counterculture and the left alike, by concerns over the kind of power a totalitarian state might wield if it were to take advantage of advanced technologies, of a 'technocratic' rationality through which the individual would be subject to forms of social programming. These concerns are exemplified in a diary entry made by the young Stewart Brand, later to be the creator and editor of the *Whole Earth Catalog* and a leading figure of the counterculture, in 1957. Listing his fears of Soviet invasion he wrote:

That my life would necessarily become small, a gear with its place on a certain axle of the Communist machine. Perhaps only a tooth on the gear ...
 That my mind would no longer be my own, but a tool carefully shaped by the descendants of Pavlov.
 That I would lose my identity.
 That I would lose my will.
 These last are the worst.²⁵

Such fears found vivid expression in George Lucas's *THX 1138*. Released in 1971, the film is set in a technologically advanced city, located underground and ruled by an inhuman computational logic. The film's *mise en scène* is populated by utilitarian-clothed figures monitoring closed-circuit television screens in monochromatic interiors. Its narrative concerns technocratic manipulation, surveillance and dehumanization. In the subterranean world of *THX 1138* human identity has been reduced to an alphanumeric code. 'THX 1138' designates the film's protagonist, 'SEN 5421' and 'LUH 341', its other main characters. Communication is condensed into a series of stock phrases, pre-recorded messages and computer-issued commands. Emotions are regulated through mandatory chemical sedation and sexual activity is confined to prescribed norms. State-sanctioned religious conformity is administered through automated confessional booths furnished with over-sized reproductions of Hans Memling's *Christ Giving His Blessing*, Christ's gaze refashioned into an image of panoptical surveillance redolent of *2001: A Space Odyssey*'s HAL. Stationed on the production line or contained within the cubicle-like spaces of their domestic units, the subjects of this world appear as isolated components in a vast machine. Compliance with the city's computational order is maintained by the chrome-faced android police force

who arrest, imprison and beat THX – the film's non-compliant hero – before he escapes from his 'electronic labyrinth' in a stolen car.²⁶

The concerns addressed in *THX 1138* echo the critiques of technocratic state planning articulated by much of the left at this time. In this respect Jean Luc Godard's *Alphaville* of 1965 might be read as the source material from which Lucas's film is roughly translated.²⁷ *Alphaville* centres upon the figure of detective Lemmy Caution, assigned to persuade the exiled Professor Von Braun to leave the city of Alphaville and return with him to the 'Outerlands' of the galaxy.²⁸ Like the underground city of *THX 1138*, Alphaville is a self-contained world with strictly policed borders. It operates according to a rigidly technocratic rationality and is overseen by an omniscient central computer, 'Alpha 60'. The citizens of Alphaville speak in rehearsed and robotic phrases – 'I'm very well, thank you, not at all.' Their sexual needs are catered to by a state-run system of prostitution performed by officially designated 'seductresses'.

Much as Marx put it in his account of the mechanization of industrial labour in the *Grundrisse*, the inhabitants of Alphaville, like those of Lucas's film, have stepped 'to the side of the production process instead of being its chief actor[s]'.²⁹ But, taking things a stage further, computation has now achieved the mechanization of thought itself. It has subsumed the social to the endless reproduction of a functionally optimized system. In both films, humans are reduced to the role of merely tending to the performance of the huge banks of mainframe computers bearing over them in the control centres of the city. Pharmaceutically numbed and stripped of the language with which to express feeling, they are themselves reduced to the status of automatons, mere relays for the formulaic speech and thought patterns of a computational operating system.

Other similarities obtain between *THX 1138* and *Alphaville*. Alphaville, like the underground city of *THX 1138*, is an *unheimlich* world of constant night, impervious surfaces, institutional corridors, glass-screened laboratory rooms and anonymous apartments. The forward thrust of the narrative is punctuated with extreme close-ups of road signs, switchboards and control panels. The same device features in *THX 1138*, with its close-ups of computer monitors and the pixilated text in which the system's reports and commands are issued. In both films this invokes the all-pervading presence of a purely computational logic. Each warns of an impending technocratic dictatorship.

Alphaville, Colin MacCabe has written, alerts us to the 'future within the present'. The film is concerned with the imminent emergence of a technocratic totalitarianism shared by others in France, and elsewhere, at this time, particularly (but not exclusively) on the left.³⁰ Henri Lefebvre, and the Situationists, had,

like Godard, targeted architectural modernization and urban planning in their critique of capitalism and its presumed trajectory.³¹ In *The Urban Revolution* of 1970, Lefebvre noted that ‘a kind of overall colonization of space by “decision-making centres” seems to be taking shape.’³² Arguing that ‘urban reality’ had been subordinated to a technocratic system of ‘general planning’ and the ‘logistics of restricted rationality’, he wrote that this had reduced space to ‘a homogeneous and empty medium, in which we house objects, people, machines, industrial facilities, flows, and networks.’³³ In *Society of the Spectacle*, Guy Debord argued that ‘urbanism – “city planning” – is capitalism’s method for taking over the natural and human environment’, its ‘technology of separation’, and the means by which it refashions ‘the totality of space into its own particular decor.’³⁴ Social scientists of this period, Jean Meynaud and Alain Touraine in particular,³⁵ also drew attention to the ways in which technocrats ‘breached the boundaries between technology and politics.’³⁶ Technocracy, it was argued, threatened to supplant political democracy with social programmes and economic policies decided upon by unelected ‘experts’.

Alphaville, then, speaks of contemporary social and political anxieties.³⁷ Its characters – Natasha (Von Braun’s daughter with whom Lemmy Caution escapes the city), the seductresses, the lab technicians – are confined within the bureaucratic spaces of modern planning and modernist architecture, caught in the circuits of a programme that erases history and memory. Technocratic urbanism appears to produce a subjectivity closed in upon itself, isolated, save for the scripted interactions and formulaic speech patterns through which communication is filtered. It constructs for its operatives a space-time of fixed coordinates and limited perspectives. *Alphaville*’s premonition of all of this is echoed in that of *THX 1138*, in which conditions of confinement and dehumanization are addressed even more emphatically. But *THX 1138* parts company with *Alphaville*, and with the broader critical perspectives of the left that Godard’s film had articulated, in the type of escape route it finds for its protagonist. In the final scene of *THX 1138*, its eponymous hero escapes his subterranean confines, climbing out of a ventilation shaft and ascending into the daylight of the world above. The heat-hazed image of the enormous sun setting behind THX frames him as a figure newly (re)born into the natural world. As the credits roll the film’s closing images speak of a new beginning, the re-environmentalization of the subject.

The left were unable to so easily envisage any such escape from the spaces and techniques of instrumental reason. Lemmy Caution’s flight from *Alphaville* with Natasha in the detective’s Ford Galaxy fails to convince as an escape. The

characters remain captured within the film's shadowy scenography, and in their generic roles of hard-boiled detective and vulnerable ingénue. The film's ending is symptomatic of the fact that, for the left, there were no easy exits and no individual escape routes from an increasingly totalizing and technologically facilitated system of control. The left looked to nothing less than revolution, and with it the collective transformation of social, political and historical consciousness, as the means to avert the subsumption of social existence to the programmed logic of technocratic capitalism. In the type of exit it finds for its hero *THX 1138*, though, shows its sympathies to be with American countercultural sensibilities rather than with the politics of the left.³⁸ Filmed in the West Coast city of Port Hueneme, the film's final scene has THX ascend and escape to the free expanses of the Californian beach.

As captured in the diary of the young Stewart Brand, it was the threat to individual identity and free will posed by technocracy that most exercised countercultural sensibilities, rather than the broader political concerns that occupied the left. In *Alphaville*, Lemmy Caution confronts the central computer, Alpha 60, causing its circuits to break down and the system to collapse. In *THX 1138*, the hero, rather than engaging the system in direct combat, simply evades it. He drops out, leaves it to its own devices. The imaging of a future scenario of technocratic totalitarianism in *Alphaville* is consistent with a left critique of existing structures of power, particularly those concerning urban space and its instrumental rationalization, and with arguments for the necessity of radical social transformation. In *THX 1138*, as in the counterculture in general, the technocratic scenario serves as a foil through which to valorize individualized liberation and self-expression, to achieve immediate freedom from constraints of any kind rather than to collectively confront and transform existing conditions through struggle. Rather than fighting in the streets the counterculture advocated abandoning the technocratically rationalized city altogether. 'Workers of the world, disperse' as the *Whole Earth Catalog* declaimed in 1971.³⁹

The counterculture and the technical mentality

The thousands of communes established in America in the late 1960s, many located far from its cities, typified the counterculture's efforts to escape existing power structures rather than to contest them directly. At Drop City in southern Colorado, and in the many others its example inspired, the 'new communalists' were organized into small collaborative and cooperative groups.⁴⁰ But these

communes were not entirely isolated from one another. Links between them were cultivated, especially through the distribution of Stewart Brand's *Whole Earth Catalog*. Brand's publication, through which the communalists could source the items and equipment required for their enterprises, also served as a networked medium for exchanges of knowledge between the communes, and it linked them to projects and practices possessed of the same 'frontier spirit' in other fields. The *Whole Earth Catalog*, as Turner observes:

Featured contributions from four somewhat overlapping social groups: the world of university-, government-, and industry-based science and technology; the New York and San Francisco art scenes; the Bay area psychedelic community; and the communes. ... When these groups met in its pages, the *Catalog* became the single most visible publication in which the technological and intellectual output of industry and high science met the Eastern religion, acid mysticism, and communal social theory of the back-to-the-land movement. It also became the home and emblem of a new, geographically distributed community.⁴¹

The Spring 1969 edition of the *Catalog* featured short pieces on Buckminster Fuller's Dymaxion map, adobe construction, D'Arcy Wentworth Thompson's *On Growth and Form*, organic gardening, self-hypnosis, building your own computer and the cybernetics of Norbert Wiener. Described by Steve Jobs as 'sort of like Google in paperback form, 35 years before Google came along', the *Whole Earth Catalog* promoted, and exemplified in its format, the kind of laterally connective, interdisciplinary models of organization enthused over both by the counterculture and within the worlds of contemporary technology and research.⁴² The distributed network form, embodied in the *Catalog*, represented an alternative means of organizing the relationship between individuals, communities and information to that of the centralized bureaucratic hierarchies from which the communalists were seeking to escape.

If such diverse themes and interests could be arrayed across the pages of Brand's *Whole Earth Catalog*, this was not, as Jobs's reference to Google might imply, because they were placed together at random. The different worlds onto which the *Catalog* offered its seemingly kaleidoscopic perspectives converged upon a unifying set of models drawn from cybernetics, systems theory and ecological thought. These perspectives held in common the idea that the workings of the human brain, of nature, art and computation could all be understood as information systems – 'patterns' – produced through the interaction of material and energetic forces within given environments. Rather than locating the source of this common principle in any externally directive power, the thought of figures

fundamental to the development of the counterculture, like Norbert Weiner or Gregory Bateson, understood it as immanent to the operation of any system. The idea of a universal set of organizational and processual principles not only suggested a commonality to how human beings, art, nature and technology might be understood to operate, it also implied that they could be used to understand each other, and, further, that they could be environmentally integrated with one another to form a cohesive and harmonious whole. It was through this kind of analogical apparatus that the computer, once its miniaturization had become possible by the late 1960s, could become 'personal' and technology could be conceived as a means to facilitate nomadic lifestyles lived beyond the confining spaces of the city and its architecture.

In the thought of figures such as Max Horkheimer, Henri Lefebvre and Herbert Marcuse, in contrast, technology was often figured as an essentially alienating apparatus of power. The latter, in an essay of 1941, wrote:

Technology, as a mode of production, as the totality of instruments, devices and contrivances which characterize the machine age, is thus at the same time a mode of organizing and perpetuating (or changing) social relationships, a manifestation of prevalent thought and behavior patterns, an instrument for control and domination.⁴³

While the left understood that it was within the broader context of capitalist relations of production and instrumental reason that technology acquired such powers of 'control and domination' – Marcuse continued in the same essay: 'Technics by itself can promote authoritarianism as well as liberty' – the counterculture was unburdened by any such perspectives. It didn't have to wait on the revolution. Computational technology, 'personalized' and conceived of as operating according to the same systemic processes as those of nature and mind, could be liberated from technocracy, in the here and now, and put to progressive ends immediately. 'All Watched Over by Machines of Loving Grace', a poem by the written Richard Brautigan in 1967, imagined a 'cybernetic meadow, where mammals and computers, live together in mutually programming harmony ... a cybernetic ecology'.⁴⁴ Likewise, as Felicity D. Scott notes, the countercultural architecture/media collective Ant Farm, in 1969, 'imagined tribes of nomads appearing "on the horizon ... to replace traditional lifestyle patterns in a new age of leisure, an age without war, an age with a global consciousness, living in a cybernetic playground"'.⁴⁵ Technology was envisaged as enabling nomadic lifestyles, decentralized modes of communication and collaborative working practices within the ex-urban environments of the counterculture and, equally,

within the labs and campuses of technological research facilities. Moreover, such seemingly different environments increasingly came to resemble one another. Buckminster Fuller's technologically pioneering designs for geodesic domes served as prototypes for the dwellings constructed at Drop City and other communes, and the collaborative working spaces of Xerox Palo Alto Research Center Incorporated (PARC), a company specializing in the research and development of computational technology founded in 1970, were furnished with bean bags.

The kinds of convergence, exchange and interaction evident in such cybernetic ecologies suggest that relationship between thought and technology is operating differently than in Marcuse's understanding. Rather than serving as 'a *manifestation* of prevalent thought and behavior patterns [emphasis mine]', technology is itself actually productive of ways of thinking and behaving. This is the proposition sketched out by Gilbert Simondon in his essay 'Technical Mentality'; technology, rather than straightforwardly expressive of 'cognitive schemas', is constitutive and productive of these.⁴⁶ The 'technical mentality', he wrote, 'offers a mode of knowledge *sui generis* that essentially uses the analogical transfer and the paradigm, and founds itself on the discovery of common modes of functioning – or of a regime of operation – in otherwise different orders of reality that are chosen just as well from the living or the inert as from the human or the non-human.'⁴⁷ It is the technical mentality characteristic of any historical period, according to Simondon, that enables these 'different orders of reality' to be conceived of as operating according to the same principles. It might be added, given the specific nature of the technical mentality at work within a cybernetic cognitive schema – one of feedback loops and the interactive regulation of the 'different orders' – that there is a particular concern with the instrumentalization not just of the *analogical*, but of the *practical* relations that might be productively forged between these different orders. The mentality of cybernetics, in other words, may serve to produce a kind of common currency for transactions, conceptual *and* material, between seemingly different fields of knowledge, discourse and practice.

This possibility was exemplified in the organization of the *Whole Earth Catalog*. As an organ of what Simondon termed 'transcategorical knowledge', the *Catalog* organized its contents according to themes – 'Understanding Whole Systems', 'Shelter and Land Use', 'Industry and Craft', 'Communications', 'Community', 'Nomadics' and 'Learning' – that implied a plane of equivalence through which one could move laterally, mentally rehearsing the links that might subsequently be used to create new environments and ecologies. That lateral

movement, traversing different fields of knowledge and practice, suggested in itself a new freedom in the breaking of boundaries and the expansion of horizons, an exemplification in practice of the cybernetic technical mentality. A freedom figured in the countercultural imaginary of the beach, the open road and interstellar space. Spaces open to the infinite possibilities of mobility and connection for the technologically equipped nomadic subject. The scenes of the character THX making his getaway from the underground city in *THX 1138* are symbolic of these new cybernetic freedoms. Escaping the city in a stolen car, pursued at speed by the motorcycle police, he enters into a new contract with technology. In the driver's seat he is cybernetically conjoined with a technics of liberation. Technology, earlier figured as the instrument of a totalitarian rationality, now appears connective, intimate, environmental. Sympathetically enabling.

THX 1138 emblemizes the countercultural spacing of the subject, the ascension to the beach in the film's final sequence serving as something like the primal scene of its mythos. In this new spacing stratification between practices, disciplines, discourses and knowledge is suspended. The subject is mobilized as a technologically equipped and cybernetically conceived agent of connectivity, and returned to nature. Unifying and universalizing models provide the traction with which the subject can move with ease between nature, technology and culture in constructing its environment.

The shaping of such environments is an entrepreneurial opportunity for those positioned, like Stewart Brand, to make the connections, exchanges and transactions that will work for their own enterprises. As he wrote in his introduction to the *Whole Earth Catalog*, 'Personal power is developing the power of the individual to conduct his own education, find his own inspiration, shape his own environment, and share his adventure with whoever is interested.'⁴⁸ The figure of George Lucas, traversing the worlds of sports car racing, cinematic special effects, avant-garde cinema, narrative mythology and Buddhism, exemplifies the connective ethos of this entrepreneurial spirit. Steve Jobs, who, before founding Apple, had dropped acid, embarked on a journey of spiritual enlightenment in India and been a member of a Californian DIY personal computer group called the 'Homebrew Computer Club', is its archetype.

Figures such as Jobs were central to the valorization of the 'new economy' – supposed to be based on the free exchange of ideas, information and services, rather than on the industrial production of commodities – as a progressive movement towards the realization of individual human potential. In Apple's television advert for the first 'Macintosh' personal computer, aired in 1984, film

director Ridley Scott revisited the noirish scenography of Godard's *Alphaville* to depict a world of mass-programmed subjects and autocratic power. The spell of this technocratic tyranny is shattered, at the advert's conclusion, as a lone female athlete hurls her hammer into the huge screen from which the face of 'Big Brother' is orating. 'On January 24th', announces the voice-over, 'Apple Computer will introduce Macintosh. And you'll see why 1984 won't be like "1984".' Released from centralized bureaucratic power and set loose within the connective and mobile spaces of the new environment, we will be free, as an Apple campaign of 1997 claimed, to 'Think different'. This later advert, with its roll call of 'The crazy ones. The misfits. The rebels. The troublemakers. The round pegs in the square holes. The ones who see things differently' – Bob Dylan, Martin Luther King, Buckminster Fuller and John Lennon visualized among them – personified Apple within a countercultural lineage of figures who 'change things', creative individuals who 'push the human race forward'.

Banham, Baudrillard and McLuhan

Architecture's turn to cybernetics, and to the framing of its own practice as one concerned with forging environmental connections between human, technological and natural systems, was contemporaneous with, and related to, that of the counterculture. With an image of an astronaut on its front cover, the February 1967 edition of *Architectural Design*, titled *2000+*, featured contributions from Buckminster Fuller – 'Profile of the Industrial Revolution', 'The Future of the Future' – and John McHale – 'Outer Space', 'Man+', 'The New Symbiosis'. In this latter essay, McHale wrote: 'Recently, as in his natural symbiotic relations with plants and animals, man's relation to cybernetic systems has been subtly changing toward a more closely-woven interdependency resembling his other ecological ties. This trend often is depicted as "intelligent" machines dominating man; but the possibility is more clearly that of organic partnership.'⁴⁹

As Felicity D. Scott records in *Ant Farm: Allegorical Time Warp*, the Ant Farm group had particularly close ties with Stewart Brand and *The Whole Earth Catalog*. Brand had, at one point, commissioned the group to create a mobile environment located in Death Valley from which to produce a supplement to its 1971 edition. An account of this project – 'Production in the Desert' – appeared, in turn, in the publication itself.⁵⁰ Ant Farm's Chip Lord and Douglas Michaels styled themselves as 'space cowboys', fashioning mobile architectures and 'enviro-technologies' – such as their inflatable architectures – for the new

'enviroman'. Their 'Cowboy Nomad Manifesto', 'The Cowboy From Ant Farm' provides a flavour of their frontier-spirited take on cybernetics: 'There are cowboy nomads today, living another lifestyle, and waiting for electronic media, that everyone knows is doing it, to blow the minds of the middle class American suburbanite. While they wait the cowboy nomads (outlaws) smoke loco weed around electric campfires.'⁵¹

Architecture's cybernetic turn also featured in the September 1969 issue of *Architectural Design*. Edited by Roy Landau, this issue explored the architectural implications of cybernetics, information theory and computation in essays by Nicholas Negroponte, Gordon Pask and Cedric Price. In Pask's contribution, 'The Architectural Relevance of Cybernetics', he writes that 'it is easy to argue that cybernetics is relevant to architecture in the same way that it is relevant to a host of other professions; medicine, engineering or law'.⁵² 'Architects', he continued, 'are first and foremost system designers who have been forced over the last 100 years or so, to take an increasing interest in the organizational (i.e. non-tangible) system properties of development, communication and control'.⁵³ Like the communalists of the counterculture, Pask affirms the open and responsive over the fixed and enclosed. He hopes that in urban design the 'inflexible plan' will give way to the 'environmental computing machine'.⁵⁴ Following the ideas of Norbert Wiener, Claude Shannon and Warren Weaver, he foregrounds the significance of 'control, communication and system' as the core components of his cybernetic model. Adopting the cybernetic as its own organizational paradigm architecture will, argues Pask, be equipped to engage effectively with other organizational systems. 'Urban development', for example, can be 'modelled as a self-organizing system' so that its outcomes are made predictable. 'There will', he continues, 'be a proper and systematic formulation of the sense in which architecture acts as a social control'.⁵⁵

Also published in 1969, Reyner Banham's *The Architecture of the Well-tempered Environment* proposed rethinking architecture as a practice of environmental management. Banham, as much in thrall to the architecture and teachings of Buckminster Fuller as were countercultural figures like Brand, argued here for 'the close dialogue of technology and architecture',⁵⁶ casting architects as the 'creators of actual physical environments'.⁵⁷ 'Societies', he wrote, 'through whatever organs they see fit, such as state patronage or the operation of the market prescribe the creation of fit environments for human activities; the architectural profession responds, reflexively, by proposing enclosed spaces framed by massive structures, because that is what architects have been taught to do, and what society has been taught to expect of architects'.⁵⁸ 'Civilized' architecture, claimed Banham, encloses

spaces and has difficulty in conceiving of “free” or “unlimited” space.⁵⁹ Space, in the Western architectural tradition, was ‘bounded and contained, limited by walls, floors and ceilings.’⁶⁰ Other societies – ‘nomad peoples’ for instance – he argued, made their environments habitable through the manipulation of power and energy, and not through the creation of physical structures. Taking the campfire as exemplary of this ‘power-operated solution,’ Banham argued that such societies enjoy inhabiting spaces ‘whose external boundaries are vague, adjustable according to functional need, and rarely regular.’⁶¹ Architecture, acknowledging the significance of contemporary technologies to its theory and practice, might now access similar environmental enjoyments.

Banham’s enthusiasm for open environments and technologically equipped architectures is evident in his own proposals for projects comprised of mechanical services – the ‘standard of living package’ and the ‘unhouse’ projects of 1965 – and in his sympathies for Cedric Price’s Fun Palace (1961–7). In this (unrealized) project for an open-framed ‘laboratory of fun,’ with its moving gantries and multiple points of access, ‘many activities’ wrote Banham, ‘will need no more enclosure than a roof.’⁶²

The references to campfires and the arguments against enclosure suffice to suggest Banham’s affinities with the environmental visions of the counterculture. His allegiances to its fetishization of the frontier spirit, and to its visions of the unimpeded movement of the cybernetically enabled subject, are epitomized in an infamous photograph of the architectural historian taken by Tim Street-Porter in 1981. In this image Banham, the ‘space cowboy,’ sporting Stetson, bolo tie, full beard and aviator sunglasses, rides his Bickerton bicycle across a Californian salt flat. In a passage from his *Scenes from American, Deserta* Banham describes the rapturous nature of this experience:

Given a really hard, smooth soda surface like that of Silurian Lake, north of Baker, which is almost glassy and without crackle patterns over much of its area, one can move with a completeness of freedom a cyclist cannot enjoy anywhere else. Swinging in wider and wider circles or going head down for ever-retreating horizon, the salt whispers under one’s wheels and nothing else is heard at all but those minute mechanical noises of the bike that are normally drowned out by other traffic. Swooping and sprinting like a skater over the surface of Silurian Lake, I came as near as ever to a whole-body experience equivalent to the visual intoxication of sheer space that one enjoys in America Deserta.⁶³

Banham could be similarly transported by the Los Angeles freeway system. In *Los Angeles: The Architecture of the Four Ecologies* (1971), he writes that this is

‘a state of mind, a complete way of life, the fourth ecology of the Angeleno.’⁶⁴ ‘If motorway driving anywhere calls for a high level of attentiveness,’ he continues, ‘the extreme concentration required in Los Angeles seems to bring on a state of heightened awareness that some locals find mystical.’⁶⁵ The Angelenos are ‘freeway-pilots ... their white-wall tyres are singing over the diamond-cut anti-skid grooves in the concrete road surface, the selector levers of their automatic gearboxes are firmly in *Drive*, and the radio is on.’⁶⁶

Banham is clear on the costs of the integration of subject and environment. The freeway demands of its drivers ‘the almost total surrender of personal freedom for most of the journey,’ their ‘willing acquiescence’ to an ‘incredibly demanding man/machine system.’⁶⁷ But things could not be otherwise. Echoing the neoliberal trope of our ‘necessary ignorance’ in the face of an incomprehensibly complex order of things, Banham explains: ‘No human eye at windscreen level can unravel the complexities of even a relatively simple intersection ... fast enough for a normal human brain moving forward at up to sixty mph to make the right decision in time, and there is no alternative to complete surrender of will to the instructions on the signs.’⁶⁸ The ‘mystical’ experience of the freeway, the opportunity to be ‘integrally identified’ with the city, effectively serve – much like the participatory delirium of Pollock’s paintings – as compensation for the relinquishment of individual agency. Spatial experience can no longer be synthesized into understanding, but we can at least revel in its ‘intoxication’ of the senses.

Where Banham affirms ‘spatial intoxication’ as recompense for the evacuation of the subject’s interiority, Jean Baudrillard’s acknowledgement of the new cybernetic grounds of experience – the ‘ecstasy of communication’ – is registered without celebration.⁶⁹ ‘Something has changed,’ he writes in 1983, and the ‘period of production and consumption gives way to the “proteptic” era of networks, to the narcissistic and protean era of connections, contact, contiguity, feedback and generalized interface that goes with the universe of communication.’⁷⁰ The ‘psychological dimension,’ he continues, ‘has in a sense vanished ... one feels that it is not really there that things are being played out.’⁷¹ The scene of the ‘dramatic interiority of the subject’ has been abandoned and the subject has become a mere ‘terminal of multiple networks.’⁷² For Baudrillard the ‘ecstasy’ of communication – telematic, neural, even drug induced – is ‘cold’ and without passion.

Sometime before Baudrillard’s ‘Ecstasy of Communication,’ Marshall McLuhan’s essay, ‘The Invisible Environment: The Future of an Erosion,’ published in *Perspecta* in 1967, already sounded an unambiguous warning about the ways in which the emerging cybernetic environment might diminish the human

subject.⁷³ McLuhan begins, following a position then recently argued by Jacques Ellul, by suggesting that all environments (the example used here is of language), per se, might constitute modes of propaganda more powerful than any ideology since their 'action ... is total and invisible, and invincible.'⁷⁴ The 'environment' is not, he says, necessarily 'bad', but its 'operation upon us' is always 'total and ruthless.'⁷⁵ It is the threat of erosion placed over the human unconscious within the environmental conditions of the 'Electric Age', in particular, that concerns McLuhan:

If the unconscious has an important and irreplaceable function in human affairs, we had best look to it – it is being eroded at a furious pace; it is being invaded by dazzling investigations and insights, and we could quickly reach a stage in which we had no unconscious. This would be like dreaming awake. This possibility that we are actively engaged in liquidating the unconscious for the first time in history, behooves us to pay some attention to how it is structured and to what function it serves in human affairs. It may prove to be indispensable to sanity.⁷⁶

McLuhan's writings – *The Gutenberg Galaxy* (1962), and *Understanding Media* (1964) in particular – exerted a significant influence within the IG, the counterculture and the avant-garde architectural groupings of the 1960s and 1970s. But McLuhan was frequently misread in these contexts – as he continues to be – as straightforwardly and uncritically championing cybernetic technologies, the 'global village' and new forms of post-Gutenberg tribalism. As he wrote in response to such misreadings:

I am resolutely opposed to all innovation, all change, but I am determined to understand what's happening because I don't choose just to sit and let the juggernaut roll over me. Many people seem to think that if you talk about something recent, you're in favour of it. The exact opposite is true in my case. Anything I talk about is almost certainly to be something I'm resolutely against, and it seems to me the best way of opposing it is to understand it, and then you know where to turn off the button.⁷⁷

McLuhan believed that artists were uniquely capable of locating this button. They had, he held, historically assumed the function of rendering emerging environmental conditions available to conscious and critical perception through the creation of 'anti-environments'. The artist, he wrote, 'does not accept the environment with all its brainwashing functions with any passivity whatever; he just turns upon it and reflects his anti-environmental perceptions upon it.'⁷⁸ The act of making the environment visible was critical to McLuhan since, while the content of the media are readily apparent, this is their least significant aspect,

having 'about as much importance as the stencilling on the casing of an atomic bomb'.⁷⁹ The *medium*, famously, is the real 'message'. It is also the 'massage' in that it 'works over and saturates and molds and transforms every sense ratio'⁸⁰ while itself remaining invisible. Its 'groundrules, pervasive structure and overall patterns elude easy perception'.⁸¹ The artist, working against this brainwashing, makes the environment apparent as a medium through which subjects are being otherwise unknowingly trained in behavioural, perceptual and communicative habits. What McLuhan termed 'pattern recognition' is the means through which artists and, increasingly, the 'amateur' are able to recognize and counter these environmental controls. His notion of pattern, here, is distinct from, in fact diametrically opposed to, that of Hamilton or Kaprow, for example. Pattern is not the ready-made register of an immanent and universal logic to be 'dazzled' and 'preoccupied' with. It is not an end in itself. It is a vehicle towards interpretation rather than a compensatory alternative to it. Pattern recognition points us towards the possibility of grasping some larger totality and its transformative processes. The anti-environment produced in response is the artist's retort to the ruthless environment. It 'seeks the development of the total awareness of the individual and the critical awareness of the groundrules of society'.⁸²

William S. Burroughs and his 'cut-up' literary technique exemplified, for McLuhan, the anti-environmental work of the artist. 'Burroughs is unique', he argued, 'only in that he is attempting to reproduce in prose what we accommodate every day as a commonplace aspect of life in the electric age. If the corporate life is to be rendered on paper, the method of discontinuous nonstory must be employed'.⁸³ Burroughs' novels *Naked Lunch* and *Nova Express*, wrote McLuhan, were 'a kind of engineer's report of the terrain hazards and mandatory processes, which exist in the new electric environment'.⁸⁴ The discontinuities of Burroughs' prose – the ellipses, hyphens, repetitions and reiterations – work to distance the reader from their linguistic environment. Rather than immersed in the medium, carried along by the syntax of each successive sentence, these devices interrupt habitual reading practices. Burroughs' *The Soft Machine*, writes Oliver Harris, is "unreadable" in the sense of being impossible to read without being forced to wonder what "reading" is at all'.⁸⁵ Burroughs aims to interrupt the flows and scramble the codes through which control otherwise functions invisibly, drawing attention, at the same time, to its operations. As he wrote in *The Ticket that Exploded*, 'Communication must become total and conscious before we can stop it'.⁸⁶ In Foucault's terms he reveals, and in the process dismantles, the mechanisms of the 'truth game': 'Cut word lines – Cut music lines – Smash the control machine – Burn the books – Kill the priests – Kill! Kill! Kill!'.⁸⁷

McLuhan's calls for the creation of anti-environments such as those produced by Burroughs, especially given the context of their being published in the pages of *Perspecta*, gestured towards the possibility that architects might produce some work of critical disclosure, something equivalently disruptive, from within their own medium. Only the Utopie group in France, though, found themselves compelled to speak out in explicit objection to the doxa of 'environments' and 'environmentalism'. In a statement prepared by the group for the Design and Environment Conference at Aspen in 1970 – delivered by Jean Baudrillard and essentially written as an attack on Banham (one of the organizers of the event) and his environmental discourse – they wrote:

The burning question of Design and Environment has neither suddenly fallen from the heavens nor spontaneously risen from the collective consciousness: It has its own history. Professor Banham has clearly shown the moral and technical limits and the illusions of Design and Environment practice. He didn't approach the social and political definition of this practice. It is not by accident that all the Western governments have now launched (in France in particular for the last six months) this new crusade, and try to mobilize people's conscience by shouting apocalypse.⁸⁸

The Utopie group understood the conference and the emerging 'environmental ideology' as a phantasmagoria – 'Aspen is the Disneyland of environment and design' – a 'Utopia produced by a capitalist system that assumes the appearance of a second nature in order to survive and perpetuate itself under the pretext of nature.'⁸⁹ It is instructive, in this context, to note the kind of sponsors the Design and Environment conference could find to invest in its enterprise – Coca-Cola, Ford Motors, IBM, Mobil Oil.

Banham might have been 'bruised' by the experience of Utopie's critical intervention, but, however prescient and incisive, it had as little impact upon architecture as that of the concept of the 'anti-environment' circulated by McLuhan.⁹⁰ The dominant tendency within architecture was towards the affirmation of the emerging cybernetic environment, with its transcategorical forms of knowledge, its entrepreneurial orientations, its celebrations of networked mobility and its promises of self-transcending immersion. Even if unwittingly, it came to serve as the vanguard for the spacing of a neoliberal subjectivity.

The push towards destratified, computational and responsive environments in which man, machine and nature might operate as interactive systems, their commutability authorized under the sign of a unifying paradigm, is widespread

and familiar in contemporary architectural discourse. Theodore Spyropoulos, director of the Architectural Association (AA's) Design Research Lab has recently written, in *Adaptive Ecologies: Correlated Systems of Living*, that 'architecture today can serve as an emergent framework that displays a new nature, combining the biological, social and computational in an adaptive and evolving organism'.⁹¹ In the introduction to this book AA director Brett Steele suggests that 'what is called architecture is barely distinguishable from the behaviours making up the natural world all around it – a world, that is, where bodies, organisms, systems and even disciplines share one thing above all else in common: their own malleability'.⁹²

Before such perspectives could reach the kind of prominence within architectural discourse that they currently enjoy, and before these could effectively converge with a neoliberal agenda within the discipline, it had first to shake off the dead weight of theory, cut itself free from the unsettling turns this had taken in the wake of May 68. It had to remove the obstacles that had blocked its supplies lines to more straightforward forms of work and productivity. It had to remake its own environment as one of lateral freedoms in order to facilitate new alignments with theories of complexity and affect, with managerial models, with new materialisms and with the philosophy of Deleuze and Guattari. It had, above all, to kill critique.