Conceptions of mobility are explored in Le Corbusier's Carpenter Center and Bernard Tschumi's Alfred Lerner Hall through the articulation of their ramped surfaces.

Conceiving an architecture of movement

Lee Stickells

Architecture is circulation.[1]
Le Corbusier, 1930

Buildings, in their simplest form, are made of vectors and envelopes.[2]
Bernard Tschumi, 2003

Ideas about movement were fundamental for Modernist architecture of the early twentieth century and are ubiquitous in contemporary theory and practice. The shifting theoretical terrain in which bodily movement is made sense of has continuously produced different understandings of architectural possibilities. For example, where in much early Modernism, and in present conventional practice, movement is often articulated in terms of technical, functional circulation and narrativised aesthetic experience (the architectural promenade), other recent practices adopt more ambivalent approaches. The emphasis in these later practices is on the relationality of programmatic elements, articulated in terms of dynamic coexistence, continual variation and fluid, interconnected space. In this way, they connect to a pervasive concern with mobility in the late twentieth, and early twenty-first century: culture is increasingly seen as dynamic and hybrid, societies are defined through complex webs of interconnection, and social theory is focused on the nomadic.[3] In this context, examining changing conceptions and structuring of bodily movement within architecture provides a means for productively reengaging with modern architectural history.[4]

In order to make the argument for a historical difference or specificity, it is necessary to trace the contours of thinking and practice in prior periods.



1 The Carpenter Center: view of the approach to the ramp and building from the north-west along Quincy Street

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2 Alfred Lerner Hall: exterior view of the atrium space from across the Columbia University campus

The scope of this paper limits discussion to a fitful coverage of architectural history: a few moments of history where movement becomes a site of enquiry for architects. The objective is to trace conceptual models of movement that have been worked architecturally and to draw out the forms of divergence between them. It is not suggested that the recent work discussed here represents a specific rupture with past models, nor that it reifies socio-political theory. Rather, the contention is that the landscape within which architecture is currently thought and practised offers a very different sense of socio-spatial possibility.

The focus of this paper is two projects by architects whose programmatic, architectonic approach has been strongly connected to tropes of movement. Le Corbusier's Carpenter Center and Bernard Tschumi's Lerner Hall are both intensely concerned with the movement of people, being university campus buildings that provide an urban interface along with diverse, communal functions. A more specific correspondence can be found in the way that the spatial articulation of movement is fundamental to the deployment of ramped surfaces in these buildings. Given these parallels, the divergent approaches to circulation, flow and the formation of public spaces that emerge prompt questions of how, in different historical moments, connective relations are forged architecturally [1, 2].

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Ways of moving/looking

Discussion of movement and circulation in architecture has become increasingly bound up with investigations of the contemporary city of flows. An intense architectural interest has developed around strands of thinking, within fields such as cultural geography, sociology and economics, that have framed urban space of the late twentieth century as a realm of plural nodes and complex flowing networks – accelerated by the processes of recent economic and social globalisation.[5] The urbanism of flows that has emerged in response has conjured a model of fluid, interconnected space in its approach to the production of the public realm; one that abandons established ideals of urban place making.[6]

Publications attempting to discern the implications of this engagement, such as *Breathing Cities: The Architecture of Movement*, emphasise the contemporary global intensification of movement and connection – describing a world overwhelmingly structured by lines of movement (physical and virtual) and their nodal interchanges.[7] For example, in *ROAM: A Reader in the Aesthetics of Mobility* it is argued that: 'If architecture is to remain relevant in respect to our ever increasing mobility, then the foundations for building have to be reconsidered as severed and uprooted'.[8] However, while echoing the revolutionary language of early twentieth-century Modernist manifestoes, these texts are more circumspect on the qualities of mobility that a new architecture is exhorted to take up. The language is affirmative and revolutionary but the lived implications of this new architectural topography are not certain. What is required is a mapping of the way notions of movement and circulation are specifically apprehended and differentiated from previous conceptualisations if we are to understand how architecture is reconfigured for this new fluid condition.

As noted above, this concern with mobility in architecture does not represent a fundamental break or disrupting of architectural thought. Movement, circulation and mobility have long been concerns for architecture. Wider scholarship on mobility reinforces the thought that it is more productive to consider the way historical senses of mobility shift, and how previous conceptualisations reverberate in the 'now', than to treat recent practice as radically disjunctive.[9] A very brief consideration of only a few, obvious examples indicates this potential within architecture. The axial *marche* of Beaux-Arts spatial planning and the more fluid meander of Le Corbusier's *promenade architecturale* are both architectural design practices that operate through the consideration of a spectator's sequential experiencing of the building; there are clear similarities in these processes. However, the distinction between the rigidity of the nineteenth-century, Beaux-Arts axis and the active, wandering promenade that was critical to Le Corbusier's work in the twentieth century is not just formal – it suggests valuable questions about the kind of experiential mobility conceived of in each case.

Even at an urban scale, Gordon Cullen's notion of serial vision, the sequence diagrams of Kevin Lynch, and the Space Syntax model of Bill Hillier are all linked by a concern with the implications of bodily movement for spatial design. And consequently their ideas are often used in conjunction to describe movement in urban design proposals. Yet, each body of work emerged from a different socio-historical condition and is structured by a different sense of mobility. Cullen's work, developed in post-Second World War England, was grounded in the Picturesque and a sensitive, aesthetically oriented observer pursuing an emotionally driven trajectory. Kevin Lynch's development of mental place-mapping was characterised by an aspiration for systematic links between personal environmental imaging and choices of path.[10] Hillier's work on Space Syntax, from the late 1970s onwards, unfolds from a mathematically driven analysis of urban movement based on abstract wayfinding models.[11] Each of these bodies of work charts the urban movement of people in different ways, considering contingency, rationality and desire variously and each implying a particular quality of mobility.

With this sense of differentiation in mind, the recent architectural interest in Deleuze and Guattari's notions of 'smooth' or 'rhizomatic' organisation, and related propositions for architectures of intensified movement and interaction, suggest it is productive to consider what particular modes of mobility are being articulated. When Zaha Hadid calls for 'a new kind of urbanism, composed of streams or flows of movement that cut through the city fabric', and produces buildings that directly employ that notion, it clearly implicates a mobility unlike that of Cullen or Lynch.[12] It is that most recent shift to a nomadic metaphysics that is the focus of this paper.

To delineate more sharply the particular qualities of mobility figured in the Carpenter Center and Lerner Hall, the focus here is narrowed to the articulation of ramping surfaces in each project. The concentration on these specific elements draws on the example of Robin Evans' 'Figures, Doors and Passages'.[13] His precise comparison of two houses across time and space illuminated differing relationships between spatial organisation and control of movement – the arrangement of domestic space and its potential power in determining social relations. It did this via a concentration on the door and passage, eloquently contrasting the gregarious space of a seventeenth-century Italian villa with the privacy and segregation of a nineteenth-century English country house. Echoing that approach, the consideration of ramps here becomes a means to distinguish similar conceptual shifts in the conditioning of bodily movement and social connection.

Movement and Modernity

> *The modern individual is, above all else, a mobile human being.*[14]

Adrian Forty has described how the concept of circulation made its way into architectural discourse after 1850.[15] The term was used variously to discuss the flow of elements like air and mechanical services

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but most importantly as a way of describing the movement of people though space. This marked the activation of a conscious consideration of the implications of movement in architecture. More general transformations in the sense of movement that occurred in the late nineteenth to early twentieth century helped firmly establish the conditions for an architecture fundamentally generated by mobility.

Towards the end of the nineteenth century, explorations of movement within architecture, and the treatment of ideas like circulation as critical elements, developed from influential analyses of Baroque architecture and urbanism. Particularly in the writing of art historians such as Heinrich Wölfflin, August Schmarsow and Paul Frankl, movement was reinforced as critical to the experience of architecture, particularly the notion that bodily movement was vital to the understanding of the form and composition of a building.[16] Around the time of these publications new conceptions and mediums of movement also made a wider cultural impact; explorations of motion permeated the cultural landscape, from fields like psychology and art history through to entertainments such as rollercoasters and early films. Lynda Nead has recently argued that:

> *In the last years of the nineteenth century and the first years of the twentieth century, the transformation from stasis to movement and the varieties and velocities of motion possessed all forms of visual media, from high art and art criticism, to still photography and magic lantern slides, popular optical toys and projected film.*[17]

During this period physiology and psychology also developed a new kinetic and embodied account of visual perception in which movement was critical – the movement of the ocular muscles as well as the projection of movement onto objects.[18] The striking experiments of Étienne-Jules Marey were important creative explorations of the consequences for this emerging knowledge. His development of representational machines, to measure and reveal formal qualities of movement in humans and animals, reinforced the animation of vision – that to see is to move and to sense movement.[19]

Such fascination with the perception and envisioning of mobility and perception also had implications for the built environment. Beyond the thrill of the moving image in experiences such as the phantom ride – part of the emerging film entertainment industry – physical machines and built structures began to provide similar aestheticised experiences of motion. As Nead has described, the World Fairs developed a range of amusements and attractions that explored the pleasures of movement at varying scales and velocities – from the heart-racing excitement of the rollercoaster to the graceful, rotating panoramas of the Ferris Wheel.[20]

All these phenomena signalled a transformation of aesthetic experiences around movement and perception, with critical consequences for architecture. Sigfried Giedion misconstrued Einstein's concepts of relativity but his idiosyncratic conception of space, developed in the early twentieth century, was influential in making bodily movement in space a focus for architectural thought. In *Space, Time and Architecture* (1941), as well as referencing some of the developing psychological and scientific ideas noted above, he offered up the work of the Cubists, the Futurists, the engineer Robert Maillart, and architect Walter Gropius, among others, as key to the formation and understanding of 'space-time'.[21] For Giedion, 'space-time' was characterised by an architecture of interpenetrating space, 'floating' and 'hovering' elements, and, most importantly, movement – in its form and perception. Giedion's concept represents a crucial example of the way in which the experience of a moving observer became a key theoretical trope of architectural design in the twentieth century.

Le Corbusier and the *promenade architecturale*

Le Corbusier's work and writings are critical examples of the way such mobile experience was internalised in Modernist design processes. He argued for an architecture developed through a fluid, three-dimensional orchestration of spaces that would relate to the meandering, active nature of human movement (echoing the active, multi-perspectival mode of perception that defined Giedion's 'space-time').[22] The movement of an observer through a building was critical to the perception and understanding of it and by 1930 he was to make the 'outrageous fundamental proposition' that '*architecture is circulation*'.[23]

Within Le Corbusier's architecture, ramps were often used as a vital spatial linkage and functional, circulatory element. That circulatory role was also critical to the aesthetic, perceptual appreciation of the architecture – the centre of architectural experience was the moving spectator and the architect's considered structuring of unfolding views and architectonic compositions. The ramp provided a clearly defined route through the building that smoothly revealed its spatial structuring and permitted constantly changing, unexpected, but carefully composed perspectives. The Villa La Roche (1923–25) was introduced in the *Oeuvre Complète* as the origin of this *promenade architecturale*. He later continued to describe the importance of this pathway or circuit, beyond functional concerns, as relating integrally to the individual's experience of the building's formal qualities.[24] During the twentieth century there was an extensive assimilation of these ideas as the strategic gesture of a movement route.[25] In the work of James Stirling for example (the *Staatsgalerie* in Stuttgart, completed in 1984 is an instance), there was a more direct appropriation and extension of the *promenade architecturale*.[26] With this, a consistent understanding and deployment of the ramp as a dynamic experience developed. It was associated with the concept of the promenade and the sequential unravelling of a building's formal and spatial qualities, while being conditioned by that earlier line of thinking that tied movement to an individual's aesthetic reception of the work.

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The Carpenter Center for Visual Arts

The Carpenter Center for Visual Arts (1961–64) is a valuable site of enquiry as a project where Le Corbusier conceived circulation, and the configuration of ramping surfaces, in those experiential terms as well as in relation to the social connectivity of its spaces. It was his only building in North America and as such he regarded it as an important demonstration of his architectural principles.[27] Built adjacent to the Harvard Yard, the Center is anchored by a cubic volume extended and penetrated by a number of other rectilinear and curved secondary volumes. It is set dynamically at an angle to the surrounding street grid and buildings. However, the most striking aspect of the building, and the focus of this discussion, is the S-shaped ramp that ascends and slices through the building, connecting the adjacent streets and seeming to tether the building to the site *[3]*.

The concept of a ramp that traversed the site and plunged through the building was present from the very start of the design process. In one sense it was considered a reification of an existing desire line across the site. More importantly though, it was a *promenade touristique* that would convey people through the heart of the building and showcase its activities and architecture.[28] Le Corbusier had a great personal attachment to the Center's programme – enthusiastic about a building that would draw the public and students together, promoting education in visual arts (educating 'the hand and eye') as well as being demonstrative of that process. He envisaged people moving through the building and site both day and night – the activities of its users and passers-



3 The Carpenter Center: view from the south of the ramp penetrating the main building volume

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by being visually integrated by the architecture. The conception of mobility that structured the architectural approach and, more specifically, the articulation of the ramp focused on controlled, visual exposition for a moving spectator. Movement revealed the architecture but did not generate it in the way that Tschumi's Lerner Hall would later attempt.

At the Carpenter Center, Le Corbusier's *promenade architecturale* is a discrete experiential manoeuvre that remains detached from the sociality of the interior through physical disconnection, framed observation, spatial separation and visual interruption. Le Corbusier conceived the ramp as critical to an architectural integration and sociability in its articulation of the building's spatial and formal qualities. Yet, although it passes through the heart of the building, its physical and visual connection to the primary volumes is partial and carefully controlled. Most obviously, the ramp doesn't lead to the building's primary entrance and lobby which is situated at ground level, tucked under the southern studio; but there are a number of other aspects of its construction that also reinforce a sense of disengagement.

The ramp's physical disconnection can be clearly seen in the way that it ascends above ground level to become a powerful formal gesture but also one where a distancing between the user and the building is consistently articulated. There is limited intersection between the ramp and main building: it levels out at only one point to allow entry to the secondary gallery space and the stair block, while its expression as sinuous concrete chute generates a constant forward momentum for the pedestrian. Further, while travelling on the ramp, observation of the interior spaces and their activities is also closely controlled. The active studio spaces are either held aloft above the ramp – unreachable – or screened by the *brises soleil* at levels two and three. Their facades only communicate activity when the ramp traverses the interior of the building – with the effect of tunnelling a space through rather than actually engaging the interior volume. With this manoeuvre the studio spaces are composed for the spectator as layered tableaux – vivid but distant. The spatial separation between ramp and facade and the continual level differences between interior and exterior space consistently rupture the visual connection. In addition to this, the lighting differential set up by passing from the exterior to the shaded void, as well as the contrast of lit interior and unlit exterior place the ramp user in a voyeuristic position *[4]*.

The ramp at the Carpenter Center organises a succession of arresting visual compositions of site and building; a well understood aspect of the *promenade architecturale*. As well as this, movement along its length involves perceptual effects activated by the kinetic activity of the observer. However, the ramp is not actually a device that provides an encompassing revelation of the Carpenter Center's spaces and programming. From it one is largely oblivious to the building's internal qualities. One key example is the spatially segregated lobby/gallery. It slides under the ramp and has a visual connectivity that emphasises that opposing movement. Compounding the disconnection, from the interior of that space the ramp is presented as a blank blade wall. These sort of visual interruptions occur



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throughout the building and its site and they foster a disjunction between the ways that a visitor's movement reveals particular formal effects while veiling programmatic connections.

The Carpenter Center is intriguing because of the way Le Corbusier extended and reconfigured his architectural principles through the project. It has been argued that the building is a turning inside-out of his architectural principles and that the notion of the *promenade architecturale* is extended experientially.[29] However, more important to this discussion is the distinctive position of the ramp at the Carpenter Center as a concrete ribbon that intersects, brushes, floats over, and interacts, with the active volumes of the building but is always an observational domain. It is a conspicuous example of the ramp as a discrete circulatory element, conceived as an architectonic device for fixing the attention of the monadic observer. It constructs a careful spatial experience that works to represent the building's programme and activity to the viewer, emerging from a visually determined mode of mobility.

Ramps and occupation

The form of ramp employed by Le Corbusier, in its organisational and programmatic qualities, corresponds to a particular sense of mobility that connects back to the emergence in the early twentieth century of an interest in the perceptual implications of movement. By contrast, a number of architectural projects of the past two decades have focused on other possibilities generated by movement within architecture and the deployment of ramped surfaces. The projects of firms such as Foreign Office Architects, OMA, UN Studio and Bernard Tschumi Architects have consciously engaged with conceptualisations of urban space that emphasise the contemporary city as a realm of intensified flows: the 'liquid modernity' described by Zygmunt Bauman or Manuel Castells' 'space of flows'.[30] In contrast to the ramp as a conduit for sequential, orchestrated visual experience, this more recent architecture has often contained ramps that attempt to reconceive the circulatory function. An interest has developed in the deployment of ramped surfaces that blur their programmatic status and suggest other modes of occupation, developing what can be called activated surfaces. There are two recurring, intertwined concerns in this shift. An interest in the phenomenal, corporeal effects of ramping surfaces has unfolded alongside the pursuit of social affect through ramps as liminal or hybrid spaces developing propinquity.

Investigations of the phenomenal aspect can be linked back to ideas most prominently explored by Claude Parent and Paul Virilio in their development of the 'function of the oblique'. During the 1960s the two attempted the production of a new means of inhabiting space through the oblique surface, which was understood by them to promote continuous, fluid movement and forced the body to adapt to instability.[31] The notion of a connectivity established through uninterrupted ramping surfaces also relates to the concept of smooth space developed by Deleuze and Guattari, where: 'The smooth is the continuous variation, continuous development of form' and 'the points are subordinated to the trajectory'.[32] Deleuze and Guattari's work is a crucial link between recent explorations of bodily affect and structural experimentation and the application of ramps as spaces of intensified sociability through organisational effect. Instead of channelling circulation, the extended, activated surfaces of ramps are seen as supporting a drifting, contingent motion – embodying a potential for non-linear, circuitous occupation of space that promotes productive, informal interactions and events. In their own work, OMA have described that situation as the production of 'social condensers': 'Programmatic layering upon vacant terrain to encourage dynamic coexistence of activities and to generate through their interference, unprecedented events'.[33]

That approach, with its fusing of event and circulation, can be seen particularly in the work of Bernard Tschumi Architects. Across a number of buildings and projects Tschumi has pursued the production of complex 'event spaces' that have employed ramped surfaces to activate and intensify the social occupation of interstitial, communal spaces.[34] Within that work Tschumi has developed an architecture that resonates with that of Le Corbusier but works through a different sense of mobility. Their pronouncements on the importance of movement for architecture can sound strikingly similar but the qualities of movement and their effect are quite dissimilar.

4 The Carpenter Center: view from the ramp, passing through the building

5 Alfred Lerner Hall: interior views of activity on the ramps



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Alfred Lerner Hall

The student centre designed for Columbia University by Bernard Tschumi Architects provides a useful example of the ramp as an activated surface and a contrast to the Carpenter Center. The programme is contained within a rectilinear volume that accords with the regulating lines of the campus' 1890 masterplan. Two rectangular volumes, with a materiality intended to respect the historical context, book-end the large volumes of the auditorium and theatre as well as the 'Hub'. The Hub itself is a glazed lobby space traversed by a number of ramps and intended as a major social condenser – physically and visually linking elements like the lounges and auditorium. The importance of this programmatic intensity is emphasised by the architects:

> *The myriad activities that take place around the central void of the ramps are also visible from a series of lounges placed around its perimeter. The number and scope of those activities make the student centre seem like a small city, at once traversed and animated by the dynamic circulation of the ramps [5].*[35]

Tschumi specifically sees Lerner Hall as part of an ongoing concern with realising the 'unfulfilled potential' of the ramp demonstrated by Le Corbusier at the Carpenter Center.[36] Nevertheless, a very different imagining of architectural mobility shapes Lerner Hall. Corbusier's *promenade architecturale* and *promenade touristique* most readily connect with the experiential concerns developed at the beginning of the twentieth century – the shaping of a mobile observer's perception of interpenetrating space. Tschumi's work, by comparison, takes as its starting point 'the inevitable intrusion of bodies into the controlled order of architecture'.[37]

The integral role of the ramps in trying to generate a sociable, active space can be seen in Tschumi's attempted development of both the phenomenal and social potentials described above. This is played



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6 Alfred Lerner Hall: interior view of atrium space with ramps

7 The Carpenter Center: view from the north of the ramp penetrating the main building volume

8 Alfred Lerner Hall: interior view of window to student lounge, reflecting the adjacent ramps

out through the ramps' positioning as the primary circulatory system, their response to topographical conditions and their articulation as spaces of exchange as well as movement. As a circulatory system, rather than defining a discrete, linear route through the building, the ramps are inserted as a network of paths that bridge the void. Their interconnection with further stairs and landings is intended to augment this sense of a three-dimensional web of connections that accommodates multiple pathways rather than a prescribed route *[6]*.

The response to the topographical conditions of the campus (a half-storey difference between the Broadway and campus sides of the building) allows an intensification of the effect: the use of ramps traversing half-floors creates an increased frequency, emphasises their physical presence and sets up a dynamic visual relationship between the diverging planes. It is from these constantly shifting floor plates that Tschumi imagines an emergent sense of continual flow through the space – an animation expected to remain even when the ramps are unoccupied.

Most importantly, the ramps are proposed as a social condenser – not only creating visual linkages between programmatic elements but also accommodating multiple functions themselves. To intensify that aspect, spaces such as student lounges, practice spaces and computer labs are directly adjacent and accessed from ramps, they are interlinked by the ramps and in some cases, for example the mailboxes, they are part of the ramp space itself. Through all these tactics – the provision of a circulatory network, the dynamism of the counterpoised surfaces and the programmatic overlapping – the ramps at Lerner Hall are intended as activated surfaces rather than parts of a *promenade architecturale*.

Conclusion

In examining the Carpenter Center and Lerner Hall, particular attention was focused on how approaches to spatial arrangement in each were generated by an architectural concern with movement. The importance of the coupling between experiential and architectural organisation, embodied in the articulation of ramped surfaces, was highlighted through a consideration of their role as an architectural device impelling or inducing different qualities of bodily motion. The Carpenter Center's ramps can be seen to have emerged from an understanding of movement as structuring the individual observer's perception of the building's formal qualities *[7]*. By contrast, Lerner Hall's ramps emerged from a privileging of movement in the production of intersecting and overlapping social activity *[8]*.

Consideration of the differing accommodation or obstruction of bodily motion, proximity and engagement opened up a discussion of the particular conceptions of mobility operating in each project. Although movement can appear as a neutral, abstracted concept, operating consistently across modern architectural history, its continual recurrence in architectural discourse demands an attention to the specificity of its imagining. The shift discerned in these two projects, from concerns with isolated route and spatial tableaux to explorations of intensified interaction and spatial superimposition, suggests that this form of attention to the structuring of movement spaces is a productive site of enquiry.

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Tracing such specific articulations of movement space is relevant when terms such as 'spaces of flow', 'continuous surfaces' and 'mobility' have become commonplace in contemporary architectural discussion. However, in considering the qualities of mobility that are enacted in the two buildings it is important to note that the opposition given here between an architecture of isolation and one of sociability only partially addresses the ways that mobility is represented, practised and embodied. The ramp at the Carpenter Center is a public thoroughfare that reinforces an established connection between two streets; it is accessible to anyone and open at all times. By comparison, Lerner Hall is only partially accessible to the public and the ramped spaces are the realm of students and staff – accessed through turnstiles via security swipe cards. This distinction points towards issues around access, flow and circulation operating at multiple scales within the projects; the ramped surfaces providing just one point of articulation. The broader effects of these buildings and their structuring of mobility cannot be neatly delineated here: as spaces of encounter, interaction and exchange, they are complex and emerge out of constellation of forces.

Notes

1. Le Corbusier, *Le Corbusier Talks with Students: From the Schools of Architecture* (New York: Princeton Architectural Press, 1999), p. 47.
2. Bernard Tschumi and Irene Cheng, *The State of Architecture at the Beginning of the Twenty-First Century* (New York: The Monacelli Press, 2003), p. 64.
3. Tim Cresswell, *On the Move: Mobility in the Modern Western World* (London and New York: Routledge, 2006); Stephen Graham and Simon Marvin, *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition* (London and New York: Routledge, 2001); Arjun Appadurai, *Modernity at Large: Cultural Dimensions of Globalization* (Minneapolis: University of Minnesota Press, 1996); Marc Augé, *Non-Places: An Introduction to the Anthropology of Supermodernity* (London and New York: Verso, 1995); John Urry, *Sociology Beyond Societies: Mobilities for the Twenty-First Century* (London and New York: Routledge, 2000); Gilles Deleuze and Felix Guattari, *Nomadology: The War Machine* (New York: Semiotext(e), 1986).
4. This paper is intended to connect with other recent research focused on movement in architecture, including: the investigations of Paul Emmons on diagramming flow: 'Intimate Circulations: Representing Flow in House and City', *AA Files* 51 (Winter 2005) 48–57; John Macarthur and Antony Moulis' analysis of the relationship of circulation to the history of the architectural plan: 'Movement and Figurality: The Circulation Diagram and the History of the Architectural Plan' in Andrew Leach and Gill Matthewson, *Celebration: Proceedings of the 22nd Annual Conference of the Society of Architectural Historians, Australia and New Zealand* (Napier: SAHANZ, 2005) 231–35; and Timothy Brittain-Catlin's study of Pugin's approach to circulation as a way of critically approaching embedded meaning in the architect's convent works: 'A. W. N. Pugin's English Convent Plans', *Journal of the Society of Architectural Historians* 65:4 (2006) 356–77.
5. For example: Eduard Bru (Ed), *Metapolis Dictionary of Advanced Architecture: City, Technology and Society in the Information Age* (Barcelona: Actar, 2003); George Flachbart (ed.), *Disappearing Architecture: From Real to Virtual to Quantum* (Basel: Birkhäuser, 2005); Albert Ferré et al (eds), *Verb Connection: Architecture Boogazine* (Barcelona: Actar, 2004); Hans Ibelings, *Supermodernism* (Rotterdam: NAi Publishers, 1998); Foreign Office Architects, *Phylogenesis: Foa's Ark* (Barcelona: Actar, 2003); Ben van Berkel & Caroline Bos, *UN Studio: Design Models – Architecture, Urbanism, Infrastructure* (New York: Rizzoli, 2006).
6. This is explored in Lee Stickells, 'Flow Urbanism: the Heterotopia of Flows' in Michiel Dehaene and Lieven De Cauter (eds), *Heterotopia and the City: Public Space in a Postcivil Society* (London: Routledge, 2008).
7. Nick Barley (ed.), *Breathing Cities: The Architecture of Movement* (Basel: Birkhäuser, 2000).
8. Anthony Hoete (ed.), *ROAM: A Reader in the Aesthetics of Mobility* (London: Black Dog Publishing, 2004), p. 19.
9. See, for instance: John Urry, *Mobilities* (London: Polity Press, 2007); Tim Cresswell, *On the Move: Mobility in the Modern Western World*.
10. Gordon Cullen, *Townscape* (London: The Architectural Press, 1961); Kevin Lynch, *The Image of the City* (Cambridge: MIT Press, 1960); Donald Appleyard, Kevin Lynch & John Myer, *The View from the Road* (Cambridge: MIT Press, 1965).
11. Bill Hillier and Julienne Hanson, *The Social Logic of Space* (Cambridge: Cambridge University Press, 1984).
12. Zaha Hadid, 'Movement and Porosity' in Bernard Tschumi and Irene Cheng (eds), *The State of Architecture at the Beginning of the 21st Century* (New York: The Monacelli Press, 2003), 71.
13. Robin Evans, 'Figures, Doors and Passages' in Robin Evans, *Translations from Drawing to Building and Other Essays* (London: Architectural Press, 1996).
14. Richard Sennett, *Flesh and Stone: The Body and the City in Western Civilization* (London: W. W. Norton & Company, 1996), 255–56.
15. Adrian Forty, *Words and Buildings,* (London: Thames & Hudson), 87.
16. Key works include Heinrich Wölfflin's *Renaissance and Baroque* (1888) and Paul Frankl's *Principles of Architectural History* (1914). For discussion of their significance see Michael Podro, *The Critical Historians of Art*, 99–104, Mallgrave and Ikonomou, *Empathy, Form and Space*, Adrian Forty, *Words and Buildings*, 92–93, Macarthur, Picturesque movement chapter.
17. Lynda Nead, *The Haunted Gallery: Painting, Photography, Film c.* 1900 (New Haven: Yale University Press, 2007), p. 1.
18. Ibid., pp. 30–35.
19. See Erin Manning, 'Grace Taking Form: Marey's Movement Machines', *Parallax,* 14:1 (2008), 82–91; and Lynda Nead, *The Haunted Gallery: Painting, Photography, Film c.* 1900, pp. 19–21.
20. Lynda Nead, *The Haunted Gallery: Painting, Photography, Film c.* 1900, pp. 13–15.
21. Sigfried Giedion, *Space, Time and Architecture: the Growth of a New Tradition* (Cambridge, MA: Harvard University Press, 1963).
22. The relationship between the Le Corbusier's planning through circulation drawings and the axial structuring of the Beaux-Arts *marche* is discussed in John Macarthur and Antony Moulis, 'Movement and Figurality: the Circulation Diagram and the History of the Architectural Plan' in Andrew Leach and Gill

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23. Le Corbusier, *Le Corbusier Talks with Students: From the Schools of Architecture* (New York: Princeton Architectural Press, 1999), p. 47.
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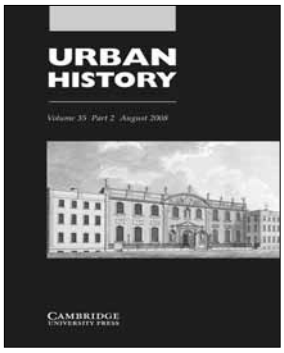
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