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Movement and Figurality
The circulation diagram and the history of the architectural plan

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Knowledge of the plan competes with self-consciousness of experience. The less we are able to understand our spatio-visual experience by the abstract coordinates of the plan, the more we are thrust back into a lived experience of the building in duration. This formula, frequently unacknowledged, has been one of the main precepts of the experientialist modernism which arises out of the picturesque and which stands in critique of classical idealism. One of the paths to critique this formula is by showing that the attention to the experience of the spaces in duration is predicated on obscuring, complicating and weakening the apprehension of the plan as a figure. Another development in the practice of modern planning has been architects using a kind of over-drawing where human circulation diagrams or 'movement lines' are drawn expressively across the orthographic plane; thus representing the lived experience of buildings. We will show that these two issues are linked; the plan's weak figure and the privilege this supposes for durational experience has a corollary—experience itself demands to be visible in the plan, and this is one origin of the present fascination with 'diagramming'. In this paper we explore the practice of architectural planning and its theoretical underpinnings in an attempt to show the viability of a history of architectural planning methods.

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This paper argues for the potential of a general understanding of the architectural plan. By 'general' we mean that we are interested in the concept of the plan, its history and the techniques by which architects make plans. It might seem unlikely that we could say much that is useful about the plan in its generality. The plan has been an integral, general tool for architecture across diverging socio-historical circumstances, in which the concept of architecture has also varied greatly. It is difficult, then, to imagine a history of the plan that is premised on a solid concept of architecture. However, this is, in part, what interests us: what bases are there for a longitudinal history of architecture? A history of the particular concrete interactions of architects, buildings, clients, technology, cultural capital and epistemologies leaves architecture not much more than its name. Even a history of ideas of architecture such as Kruft's *History of Architectural Theory* is a collection of dozens of divergent stories.[1] On the other hand, the plan, we argue, has had a relatively unified history in the architecture of Europe and its colonial cultures since the Renaissance. This makes it possible to treat the plan not as the evidence of greater ideas, but as the object of study. We also will argue for a commonly held belief that this period of Western culture can be understood as divided at the epoch of late Neo-classicism and the subsequent development of asymmetrical plans. To understand the 'planning' of Borromini or the elder Blondel requires an historical education, and a concerted effort to think differently, whereas the planning of most buildings since

1800 can be read in happy ignorance of the beliefs and circumstances of their builders. While we contend that the Renaissance concept of the plan as figure is an important cultural memory for architects through to the present, here we have only the space to explore the contemporaneousness of planning since 1800. In any significant sense, the architecture, of Karl Fredrick Schinkel and Richard Norman Shaw is quite different, but we can nevertheless compare their planning in much the same way we would compare Rem Koolhaas with Alvaro Siza. It is little more of a stretch to cross the square and to compare the route based planning of Shaw and Siza. This is not to argue that their architecture is the same or even similar, but merely that by establishing what the plan is, and the relatively few strategies that have been over the last couple of centuries, we produce something of an architectural *long durée* against which the more eventful history of the discipline can be registered.

Our approach is founded on existing scholarship. Since the 1970s, Alan Colquhoun, Michael Dennis, Robin Evans and others have identified the plan as one aspect of a continuity underlying the revolutionary appearance and technology of modern architecture.[2] In particular, the planning of Le Corbusier has been shown to be, to a degree, an inversion implicit in Beaux-Arts rather than a complete novelty. But the current understanding of the form of the plan is limited by a false conception that picturesque or aformal planning is an alternative to classicism. It is commonly thought that the picturesque

and the classical are opposing concepts of the plan: the former determined through relations of site and view point and the latter determined by a priori formal concepts. Richard Etlin, for instance, puts Le Corbusier's architectural promenade not in the history of Beaux-Arts figural planning but picturesque free planning.[3] This makes the concept of route-based planning seem to be the architectural actuality that can break the classical figure and give an other-than-figural logic to the plan. Our research shows that this opposition is, at least, unsubtle. At the point at which it emerged, picturesque planning was as much a kind of form as it was a program for an experiential architecture. Similarly, the movement diagrams of modern architects are themselves kinds of figures traced through their history to the Beaux-Arts. In this paper, we have only the space to layout this argument that will need later to be substantiated: that movement and figure are interacting principles sufficient to describe plans and planning.

For most of the past, architects designed buildings that were symmetrical in plan. Vernacular buildings were often asymmetrical and some buildings designed by architects became so over time, but these were 'irregular' in the sense that lack of money, land, foresight, expertise or willpower meant that there was no geometrical figure making them a whole. Symmetry produces a sense of wholeness through a structure of completion; every element to which our attention is drawn has a pair for us to find. This is not only an issue of pattern but of 'figure' in the specific sense of the human body with its lateral symmetry and frontal-dorsal directionality. Today it is counter-intuitive to think of symmetry as a device for making a plan because its effects of redundancy run against the planning values of efficiency and site specificity. Sometimes modern buildings are symmetrical, in order to denote a symbolic role as in the Parliament buildings of our two great nations, or to insist on an aspect of machine production as in system built tower blocks. Symmetry in modern times signifies externalities and is applied to the plan, marshalling it to a purpose conceptualised outside of the actual plan, as in the Beaux-Arts principle of the *marche*, which we will discuss in a moment. In the pre-modern world symmetry had a fuller meaning than this; it would have made little sense to separate symmetry as a formal property from the plan as a disposition of space and then to seek relation between them. Chains of metonymy made symmetry indistinguishable from wealth, intention, the ideal of form in figuration—indistinguishable from architecture itself. It is not merely that the not-symmetrical was poor, ill-conceived, clumsy and perhaps monstrous, these are, after all, associations that we no longer share. More importantly for the present inquiry, in the past there was no device, principle or technique of planning, outside of the plan. We have different ideas of what plans are and what they do, but more than this, in modern times the plan has been extended into a realm of planning where criteria such as efficiency, legibility and fit to site are specific to the plan but not necessarily to the building

as a whole. Planning has become something of a meta-architecture, or an anterior architecture, an exercise in which architects scope the architectural possibilities of a project prior to a comprehensive design, prior to what will make it architecture.

It might seem as if we are exaggerating the difference between the procedures of the architects of the past and more modern ones. This is partly true, but we do so to counter a common misconception. While it is obvious that architects in the past had spatial requirements and relations to enact, sites that constrained them and so on, this does not mean that they were like us but confused by superstition, enslaved to a canon, and so on. They thought of the making of plans no less seriously than us, just differently. What is more interesting is what also marks us as their descendents: however much we might think of the plan as an instrument, a diagram, an architecture prior to architecture, we still see it and learn it as a figure, in two ways. Firstly, there is the way rambling, unclosed and apparently accretionary plans are in fact recognized as kinds of figures, be they weak and imprecise, standing for a familiar set of ideas of fit to site, the foregrounding of route, view and so on. Secondly, there is the way circulation patterns can produce a diagram or figure that gives an agenda or sums up the principles of the effects of plan. Thus the loose plan deeply embedded in its specific relations and determinations, inscrutable to any but a trained architect can, by virtue of the diagram, again become a figure.

It is usual to argue that the architecture of the picturesque around 1800 invented the idea that topography and viewpoint can determine building form, thus making possible functional criteria for planning. This is roughly true, but the history of this discovery complicates the picture. What a closer reading of the period texts reveals is that picturesque architecture was in the first place an attempt to define the formal properties and external appearance of vernacular buildings. Ancient castles and crumbling cottages were admired for a kind of form called 'irregularity'. As Uvedale Price put it in 1802:

Now if the owner [...] instead of making a regular front and sides, were to insist upon having many of the windows turned towards those points where the objects where most happily arranged, the architect would be forced into the invention of a number picturesque forms and combinations, which otherwise might never have occurred to him.[4]

Price's causality is the reverse of modern understandings of how a building should relate to its site. For Price, visual variety is the aim of the picturesque architect and viewpoint the means to produce this variety, not an end in itself. But are particular view constraints required to make a picturesque architecture? The answer to this question is ambiguous, because architects in the early Nineteenth Century quickly developed a formula for picturesque architecture that is still familiar today. However, this is

not the simple caricature or dumbing down that it might seem. The fact is that building a rambling un-figural plan foregrounds visual experience whether or not such experience is explicitly planned for in the manner of Le Corbusier's architectural promenade.

So what is the formal recipe for an experiential architecture? Picturesque buildings should seem to be an open set of parts that we can imagine being supplemented or reduced. They should avoid continuous wall areas. The edges of space should be layered, framed and often opened at the corners, as Price's ideas of 'recession' and variety imply. Some parts being dominant and others subsidiary, there should be a sense of directionality with the building facing the landscape. At least, the back should be different to the front. There are some other simple tricks more particularly related to the plan. Picturesque buildings should have long perimeters to their plan area, and they should extend in one main direction, preferably across the topography to emphasise the rise and fall of the land. There should be some points of return in the plan so that it is possible to view the exterior of the building from within it. Visible roofs are good in the picturesque because their intersection and overlap with the walls makes for variety. However, because the rise and fall of roofs can indicate the plan depth, making the plan visible, a picturesque building should have a roof plan that differs from the floor plan, and generally be more complex. We think that much picturesque architecture from 1800 to the present, from the Rural Italian style to the regionalist modernism prevalent in present day Australia, is simply the caricatured application of these recipes and tricks. Early on architects such as John Nash and John Soane realised that not only the views out but the views from space to space within the building could determine the overall plan figure and make the plan a kind of internal landscape. The picturesque architect attends to the direction of movement and sight like the gardener whose rule is to never let the foot travel the path of the eye.[5] Architects may reveal the foot of a stair or ramp but leave its destination unclear. Conversely, they may reveal a destination such as an upper-level balcony but leave its access to be discovered. They may construct an illusion of differing scales for spaces opening onto one another by contrasting light, recessing forms and complicating edges.

Some architects of a picturesque persuasion will say that any kind of planning based on a system is 'formalism', meaning false and artificial. They follow the rule that the only test of planning is visual experience: what is seen from where and under what circumstances. The plan as a whole cannot be seen and therefore has no meaning as a totality; it is the contingent sum of what has been planned. This naturalism is in the spirit of the picturesque, yet it lacks a critical distance from the picturesque and so risks collapsing into the kind of 'lite' phenomenology that the picturesque is often taken to be. Committed as we are to a formal description of the picturesque, we want to see the matter the other way around. The less we are able to understand our spatio-visual experience

through the abstract coordinates of the plan, the more we are thrust back into a lived experience of the building in duration. Knowledge of the plan competes with the self-consciousness of experience. A simple, identifiable outline figure of the plan is the biggest danger to the picturesque effect; it needs to be obscured to allow one to *gauge* the building's geometry and overall dimensions, to *deduce* the number, position and sequence of rooms. Picturesque architecture is in fact close to the letter of Price: complicating, obscuring and thus weakening the outline of the plan draws attention to the experience of the spaces in duration, *whether or not* they have been carefully planned in a picturesque scenography. Similarly, the views out of the building to the landscape and to adjacent external areas such as the terraces and formal gardens favoured by Price and the landscape gardener Humphry Repton (and so similar to the spatial extension discovered by modernists) have another role in planning. It is not simply that the plan contorts in response to the external landscape, but that in making local unities inside and outside the figure of the plan, the outline of the plan diminishes. In the end, the difference between the picturesque and the un-picturesque is not about the problems and limits of the concept of form, it is about *what* is given form. Picturesque architects weaken intelligibility of the object-form of the building in order to make more intelligible the experience of space.

Another development in the practice of modern planning has been architects using (and publishing) an 'over-drawing' where human circulation diagrams or 'movement lines' are drawn expressively across the orthographic plane to represent the lived experience of buildings. Thus, the plan's weak figure and the privilege this gives to durational experience have a corollary: experience itself demands visibility in the plan. While the technique of using line diagrams to map or describe human circulation in an architectural plan is a ubiquitous method of 20th century design practice, its origins are seldom observed.[6] One clear origin for the technique arises from the 19th century Beaux-Arts concept of *marche*, which describes the action of moving through built form and volume along a building's principal axis.[7] Charles Garnier's Paris Opera (1861) offers an example of this concept, revealed in Garnier's elaborate description of the experience of attending the Opera given in his book *Le Theatre*, as well as the architectural plans themselves.[8]

To understand how the axis of a Beaux-Arts plan operates as a 'line diagram' of human movement or circulation we need to acknowledge the axis of the plan in two kinds of use. Firstly, the axis serves as an instrument of projection, by controlling the geometry of the plan. Secondly, the axis serves an instrument of composition, by serving various rules of architectural design.[9] As an instrument of composition the axis plays a particular role in allowing the designing architect to distinguish, and to reflect upon, the sequential unfolding of space and volume in a building. By making an axial line on the surface of a drawing and then situating a set of volumes along the line (as Beaux-Arts

design practice dictated) the architect was in a position to surmise, amongst other things, the overall experience produced in moving through the building. At the academy, this function of the axis was understood by other architects who could form a critical judgment of their peers' work from the information laid out in a plan drawing. Using the axial line as their guide, critics could read the sequence of volumes from the plan and imagine the experience of space that unfolded.[10]

And yet Beaux-Arts architects used the axis not simply to reflect on experience of a building but to construct that experience as well. This double function of the axial line was possible because the architect knew, in advance, that the line drawn in a plan denoted the nominal position from which a spectator takes up the experience of architecture. Thus, in the various studios and at the Beaux-Arts academy itself, the activity of making judgments about the experience of architecture was pre-conceptualised within an architectural design process. Such a pre-conceptualisation understood the axial line as a formal construction of human movement or circulation in a plan drawing.

The internalization of this technique in 20th century architectural design practice is particularly evident in certain working methods adopted by Le Corbusier that relate to his concept of the architectural promenade. Marche and the promenade both concern the sequential unfolding of architectural space before a spectator and Le Corbusier, like his Beaux-Arts counterparts, is given to representing human movement with lines made across his architectural plans. While Auguste Choisy and his 19th century reading of Classical Greek architecture in terms of a 'Greek picturesque' has been seen as precedent for Le Corbusier's thinking about the promenade, Beaux-Arts marche also figures as a critical influence, however much Le Corbusier considered it anathema.[11]

Le Corbusier uses circulation diagrams in his famous South American lecture series of 1929 were he explains the nature of our experience of architecture.[12] There he describes how our experience is a matter of the sequence of sensations acquired in moving through an orchestrated set of spaces. Experience is thus dependent on where the openings between rooms are situated, and what is seen as one moves through them in turn. When the architect comes to represent his discussion in the form of drawing, he draws a set of basic room plans to which he adds dash marks to represent the point of passage between spaces. He also uses arrows to indicate the direction of movement. These marks and lines are more than just signs for his audience. In relation to the spaces shown they are also constructive; they pin down the movement of a spectator in relation to architectural space in that they deliberately nominate those places from which architectural sensations are received

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In his lecture 'The Plan of the Modern House', Le Corbusier again represents ways of moving through

building in an architectural plan drawing.[13] The walls denoted in the sketch plan are drawn thickly and roughly orthogonally. The spectator who experiences the building is denoted by a series of lighter meander lines that move through spaces and around walls. Some of the lines are arrowed, again indicating the direction of the spectator's movement. A subtle accord between Le Corbusier's thinking and the concept of Beaux-Arts marche is also given where the architect declares that architectural problems might be best solved "if one acquires the habit of strolling with one's pencil, step by step, thinking out well the functions by which our occupant will find pleasure in living in his house."[14]

In the Beaux-Arts, the use of a line to represent human movement in relation to architectural form was conventionally acknowledged as central to the closed system that constituted the act of design. Thus the means of devising experience of architecture in drawing, and in the plan in particular, was accepted practice. Le Corbusier, for his own part, decried this formal method. He writes directly of the way in which the Beaux-Arts method of allying human movement to axial progression through space misconceives the quality of human movement that is, by its nature, active and meandering. Yet Le Corbusier's working method for constructing human movement in relation to architectural form is essentially similar, with the demonstration of this coming out of a broader analysis of Le Corbusier's drawing output over the life of his studio. An examination of the published Le Corbusier Archive reveals a host of dash marks, arrowed lines and meanders in plan drawings used for the purpose of testing and constructing human movement through space.[15] The use of lines in this way suggests the internalization of a Beaux-Arts technique at the level of Le Corbusier's working methods; an internalization that allows the technique to be re-cast in terms of an otherwise different way of thinking about movement and circulation.

If we consider the way in which the technique becomes visually evident as an operation in each case then we would observe the following. In the Beaux-Arts the function of the axis in representing and constructing movement is clearly sublimated by the more obvious function of the same axis to set out the plan's geometry—its symmetry. In this sense, visualizing the technique that constructs marche is relatively difficult without knowledge of the closed system that supports such a reading of the axis. In other words, it is easy to miss the point that human movement through volumetric space is the subject of a Beaux-Arts plan because the movement line is 'hidden' as an orthographic mark. This is not the case in Le Corbusier's plan drawings where the lines constructing movement are often characterized very differently to the grids and abstract rectilinear geometries of the plans.

To move forward in time to consider present day techniques of circulation diagramming, consideration of the form generating method employed by Foreign Office Architects for the Yokohama International Port Terminal is

instructive. The architects describe their project as one, "constructed as a systematic transformation of the lines of the circulation diagram into a folded and bifurcated surface."[16] Here again is a technique that proposes an alliance between lines describing human movement and the production of the plan. Despite the differences between a picturesque stroll and the psuedo-objectivity of circulation programming we might ask ourselves if the fashionable indeterminacy of the form of the Yokohama Port Terminal is not only the result of circulation diagramming; its vagueness is also required to fore-ground the movement patterns. There is also a distinct echo of Beaux-Arts technique. The building's axis of composition, the line denoting movement—the circulation diagram—is also synonymous with the axis of projection that constructs the geometry of the plan and the building's overall form. Contemporary practice might 'internalise' the form and intent of Le Corbusier's circulation diagrams, which characterize human movement as active and meandering, as in the picturesque, but the relation of those 'same' lines to the production of architectural plan form is different, having much in common with diagramming techniques that arise out of the late Beaux Arts and the concept of *marche*.

There is one more plane of intersection of figure and movement that we have not had time to address: when strong figures coincide with movement patterns and there is no meaning to this rather than a kind of interference. This kind of anti-classical use of geometry can be traced back to the picturesque architects who invented the rambling interior landscape of the plan, such as John Soane, but who were also fascinated by planning in triangles. Herzog and De Mueron's recent Barcelona Forum, which is planned as an equilateral triangle, undoubtedly refers to minimalist art, the sculpture of Tony Smith and Robert Morris, and the overcoming of Gestalt form through exaggeration, but as a device of planning it can be related to Soane's uptake of remarks of the Abbe Laugier around 1800.[17]

In this paper we have tried to show that even the most aformal plans seemingly based on picturesque contingency nevertheless rely on a particular form of weak planning that foregrounds and makes visible their route-based structure. Similarly, in the famous case of Le Corbusier's picturesque architectural promenade, we have shown that this is also a kind of figure relying on the Beaux-Arts *marche*. For a history of the plan to be meaningful, we need a principle of classifying plans in their own terms against which to place the stylistic, programmatic and semiotic aspects of architecture that are explicit in plans. We have argued that studying the interplay of figuration and movement in the plan gives us the vehicle for a broad ranging study.

NOTES

1 Hanno-Walter Kruft, *A History of Architectural Theory: From Vitruvius to the present*, London: Zwemmer; New York: Princeton Architectural Press, 1994.

2 Robin Evans, *Translations from Drawing to Building*, AA Documents 2, Cambridge and London: The MIT Press, 1997); Alan Colquhoun, *Modernity and the Classical Tradition: Architectural essays 1980-1987*, Cambridge and London: The MIT Press, 1989; Michael Dennis, *Court and Garden: From the French hotel to the city of modern architecture*, Cambridge and London: The MIT Press, 1986.

3 Richard A, Etlin, *Frank Lloyd Wright and Le Corbusier: The Romantic Legacy*, Manchester: Manchester University Press, 1994.

4 Uvedale Price, *Essays on the Picturesque: As Compared with the Sublime and the Beautiful and, on the Use of Studying Pictures for the Purpose of Improving Real Landscape*, 3 vols., London: J. Mawman, 1810.

5 "The foot should never travel to [the object] by the same path which the eye has travelled over before. Lose the object, and draw nigh obliquely."—William Shenstone, *Unconnected Thoughts on Gardening* (1764), p. 131.

6 In a recent article, Paul Emmons has cited the use of circulations diagrams in the late 19th century work of Viollet-le-Duc and Robert Kerr as original examples of the technique.—Paul Emmons, 'Intimate Circulations: Representing Flow in House and City', AA Files, 51 (2005), pp. 48-57.

7 David Van Zanten, 'Architectural Composition at the Ecole des Beaux-Arts from Charles Percier to Charles Garnier,' in Arthur Drexler, (ed.), *The Architecture of the Ecole des Beaux-Arts*, New York: Museum of Modern Art, 1977, p. 163.

8 David Van Zanten and Christopher Mead, writing separate accounts about the Paris Opera, refer to the Garnier's book *Le Theatre* (1871).—See David Van Zanten, 'Architectural Composition at the Ecole des Beaux-Arts', pp. 111-324; Christopher Mead, *Charles Garnier's Paris Opera: Architectural empathy and the Renaissance of French classicism*, Cambridge and London: The MIT Press, 1991.

9 David Leatherbarrow, *The Roots of Architectural Invention: Site, enclosure, materials*, Cambridge: Cambridge University Press, 1993, pp. 13-15.

10 Van Zanten, 'Architectural Composition at the Ecole des Beaux-Arts', p. 163.

11 For a discussion of Choisy's picturesque theory and its 'influence' on Le Corbusier refer to Richard Etlin, 'Le Corbusier, Choisy and French Hellenism: The search for a new architecture', *The Art Bulletin*, LXIX, 2 (1987): 264-278; Richard Etlin, *Frank Lloyd Wright and Le Corbusier*, pp. 76-149.

12 Le Corbusier, *Precisions: On the present state of architecture and city llanning*, Cambridge and London: The MIT Press, 1991.

13 Le Corbusier, *Precisions*, pp. 128-129.

14 Quoted in Paul Emmons, 'Intimate Circulations: Representing Flow in House and City', AA Files, 51 (2005), pp. 48-57.

15 See Antony Moulis, 'Drawing Experience: Le Corbusier's spiral museum projects', unpublished PhD dissertation, The University of Queensland, 2002.

16 'Foreign Office Architects: Yokohama Port terminal, 1995-2002', *Lotus*, 108 (2001), p. 82.

17 See David Watkin and Sir John Soane's Museum, *Sir John Soane: Enlightenment thought and the Royal Academy Lectures*, Cambridge Studies in the History of Architecture, Cambridge and New York: Cambridge University Press, 1996, pp. 366-367.