Bernard Tschumi Draws Architecture!

Gevork Hartoonian

The level of drawing is horizontal: that of painting vertical.
Walter Benjamin, 1917[1]

Opening

Bernard Tschumi's drawing for the *Museu de Arte Contemporânea*, São Paulo, Brazil [fig. 1], will be taken as the point of reference to discuss the horizontal and the vertical as the *structure* of drawing. The fact that a freehand image has been positioned next to a digital one, points to a number of issues including the centrality of the body for structuring a drawing based on the grid system. To emphasize the body does not necessarily mean to subscribe to a humanist discourse on the subject. Throughout this essay the body is considered a given, which can be explained by the following: that the human gaze is perpendicular to the vertical posture of the body. This 'right angle' perception of the body, or the image of a person looking at something, is historical. It is exemplified in this author's posture as he sits in front of his laptop looking at the screen positioned parallel to his face, and in the posture of a person writing on a blackboard. This essay will discuss the role technique plays for a historical understanding of the suggested ontological dimension of the body.

The implied rapport between the body and technique is perhaps one reason Tschumi displayed two different images side by side. A closer inspection of the image, however, indicates how technique works in drawing. It also alludes to the historical transformation wherein a humanist perception of

object, delivered through the Renaissance notion of *disegno*, gives way to the art-historical concept of 'the painterly', and to that of 'image building', a theme permeating the current age of digital reproduction. The discussion presented here works towards a critical understanding of Tschumi's theorization of architecture formulated in *The Manhattan Transcripts* (1981).

To address these issues, we need, first, to reflect on Tschumi's two drawings, neither of which says anything directly about the project, a museum. With its notation, the scribbled freehand drawing is less abstract than the digital one. The former entails certain aspects of the historicity of drawing, particularly its representational dimension, as will be discussed below. Still, in the freehand drawing, the upward circulation resembles the image of a suspension spring, or the form of a filament. In both analogies, one point is connected to another, facilitating the flow of energy: the gravity and/or an ascending body, the former in reference to the spring and the latter to the building's ramp. Neither of the suggested readings, however, is available in the digital image. This rather abstract drawing, which can be called 'digital diagram', ironically, comes closer to the image of a building. What structures both drawings, however, are the vertical and the horizontal, and this in reference to the standing position of the body and the body's back and forth movement. This is evident not only in the overall organization of both drawings, but also in the vertical volume of the elevator and the quasi-

horizontality of the ramp in the hand-drawn sketch.

In retrospect, one can claim that what theoretically underpins the particular drawing prepared for the *Museu de Arte Contemporânea* was already formulated in *The Manhattan Transcripts*, the written pages of which are few compared to the pages covered by images and drawings. This comparison defines a specific regime of 'imageness' which is useful for differentiating drawing from a digitally reproduced image. Whereas in one the image is raw and naked, in the other, the image operates in the realm of art. The visibility delivered by drawing is inseparable from 'the image as discourse and history'.[2] And yet, the illustrations peppering Tschumi's book are not images as such. For page after page, the reader follows a montage-like placement of drawings next to a filmic image (picture?). Noteworthy is the *grid* informing both the organization of the written text and the illustrated pages of the book. It is also important to note that both the pictures and drawings of the book are *framed*. It seems that an absent narrative structures the organizational hierarchy of both the horizontal and the vertical, and the figural (pictorial) and the abstract (drawing) of each frame. What is involved here is the criticality of *technique*, in particular the filmic montage of events, explaining Tschumi's interest in drawing architecture. To support this claim, we need to take a detour and explore the historicity of the body, drawing, and technique.[3]

Why Draw?

Fundamental to the conventional unity shared by the three sister arts of architecture, painting, and sculpture was the Renaissance discourse on *disegno*. It required drawings to present 'a visible expression and declaration of the concept one has in one's mind and which others have formed in their minds and built on'. This statement of Giorgio Vasari defines the scope of artistic progress judged by the work's quality in imitating nature, and its 'capacity to form beautiful elements for the work of art

in the mind, and then to execute them'.[4] To show the unifying nature of *disegno*, Vasari underlines the expected representational rapport between the work of art and the beholder. What this means is that recollection enables one to anticipate the whole image even through the partial representation of the object's essential features. Most Renaissance artists considered *disegno* as the technique bringing together artwork and craftwork. In the light of this, and similar to the characteristics of natural products, the work was expected to present a plausible unity between form and purpose. Like a flower or a carpenter's creation, architecture was expected to dispose of anything that in the closed and harmonious culture of the Renaissance would not have triggered delight in the beholder's mind. In Renaissance society, art was considered the agent of a broader cultural knowledge.

Still, *disegno* was not meant to impose any limit on the creativity of the artist and architect. Drawings were, rather, considered an open field where the artist could experiment with and expand the scope of his/her imagination, before producing an artifice of any cultural significance. It was, and perhaps still is, expected that a consumable idea had first to be tested on the drawing board, and then translated 'into dimensioned diagram'.[5] This is important because *imagining* involves the ontological act of leaving a mark on a blank surface. From the drawings on cave walls to the marking out of the ground for the erection of a building, various types of artists considered drawing as a means to facilitate the search for ideas. In the Renaissance, however, drawings were perceived as having the capacity to teach the architect how 'to make his edifice agreeable to the eye', and/or to guide the potter as to how to make various useful vases.[6] Drawings were understood as the primary means of making tangible the common ground implied in *techne*, the art of seeing and making.[7]
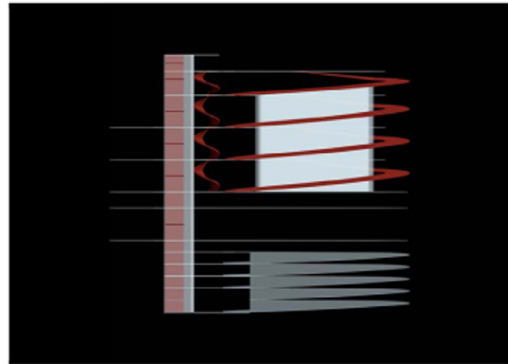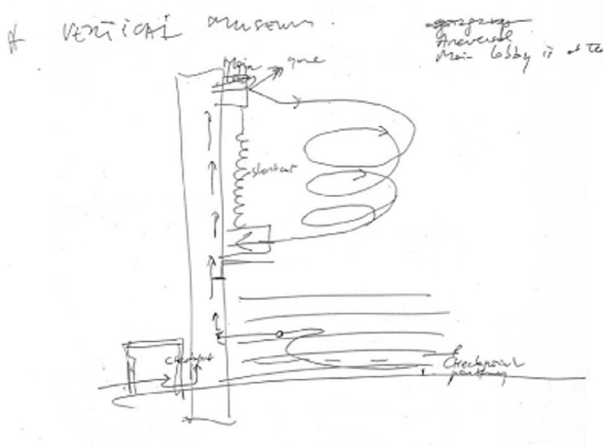
Fig. 1: *The Museu de Arte Contemporanea*. Image courtesy of Bernard Tschumi Architects, New York City.

Obviously, the painterly quality of architectural drawing, composed of lines and surfaces, projects image and imaging in a particular way. In the Renaissance, a painter's drawing was differentiated from that of the architect's. Here is how Leon Battista Alberti articulated the difference: the painter 'takes pains to emphasize the relief of objects in paintings with shading and diminishing lines and angles; the architect rejects shading but takes his projections from the ground plan and without altering the lines and by maintaining true angles, reveals the extent and shape of each elevation and side - he is one who desires his work to be judged not by deceptive appearances but according to certain calculated standards'.[8] Thus the two-dimensional drawing was able to assist the architect to imagine architecture independent of constraints imposed by materiality and techniques. The architect's engagement with the drawing, however, never achieves the phenomenological dimension theorized by Leonardo, for example. To this Renaissance master, 'every painter paints himself', and the work expresses the artist's physical and psychological makeup.[9] Nevertheless, particular to architectural drawing is the fact that from its inception the architect is fully aware that the lines and shapes drawn on paper are already conceived and imagined as architectural. In thinking and drawing the architectural, the physical and psychological mentioned in Leonardo's statement are weakened, if not debunked. However, training in the figural arts offered the Renaissance architects the 'ability to arrest imagination on paper through the mastery of the means of representation'.[10] Still, the architect's combination of lines and geometries operates, in most cases, like a sign rather than a series of marks. The specificity of a mark relates to its capacity to express what is hidden. Architectural drawing, instead, is self-referential and it is up to the judicious eye of the architect to facilitate its lawful transformation into construction in advance of the public judgement of the work's cultural validity.

Throughout Renaissance theories of architecture, it was consistently advocated that a structure should both look and stand stable. This rule was flouted by the idea of *trompes*, the most advanced theory of stonecutting developed in seventh-century France.[11] Used to facilitate additions to an existing building, the *trompe* was conceived as a structure in its own right. It was based on drawings called *traits*, where a matrix of geometric lines would define the stereotomic nature of the surface. As a drawing, *traits* dictated the shape of surfaces to be cut from the stones used as *trompes*.

Robin Evans's investigation of *trompe* shows an explicit contrast between the perception of lightness implied in the drawn geometries and the heaviness of the depicted stone [fig. 2]. For him there are two kinds of line in the drawings used for stonecutting: one light and the other heavy, one referring to 'the imaginary lines of geometrical construction' and the other indicating 'contours of the thing drawn'.[12] Furthermore, Evans reminds us of the fact that stereotomy offered a means to differentiate the tectonics at work in the classical and Gothic buildings. In most cathedrals, the ribs were built first and the surface between them was filled in later. Still, a few architects, according to him, used stereotomy to refer to forms that were considered 'ungothic and also unclassical'. Neither were these forms considered baroque. In the choir vault of Gloucester cathedral (1367), for example, the ribs look as if they are attached to a huge cambered sheet that covers the entire choir [fig. 3]. Gone in this cathedral is the emphatic distinction one could make between the column and the wall, where *decorum* hinged on the tectonic rapport between structure and ornament.[13] Implied in this development is a notion of surface that is marked by a language of geometry detectible in Philibert de l'Orme's stone interlacing.[14]

The historical shift from *disegno* to *trompe* involved the emergence of the scientific approach to nature and the disintegration of the classi-
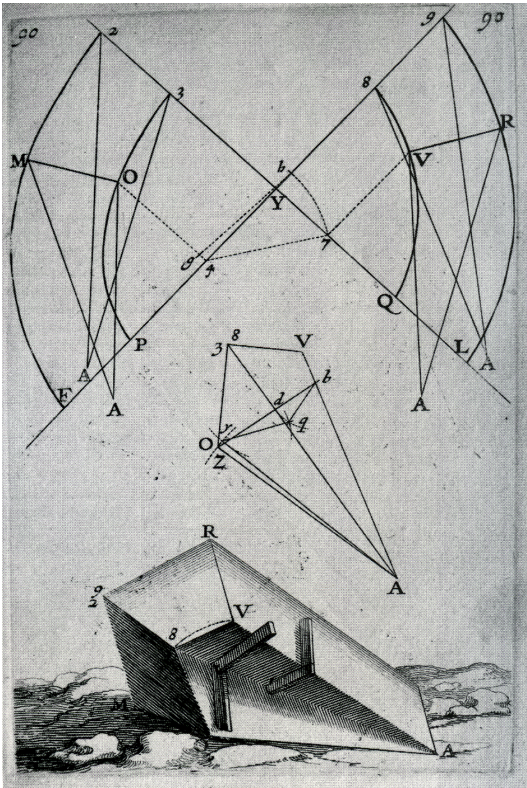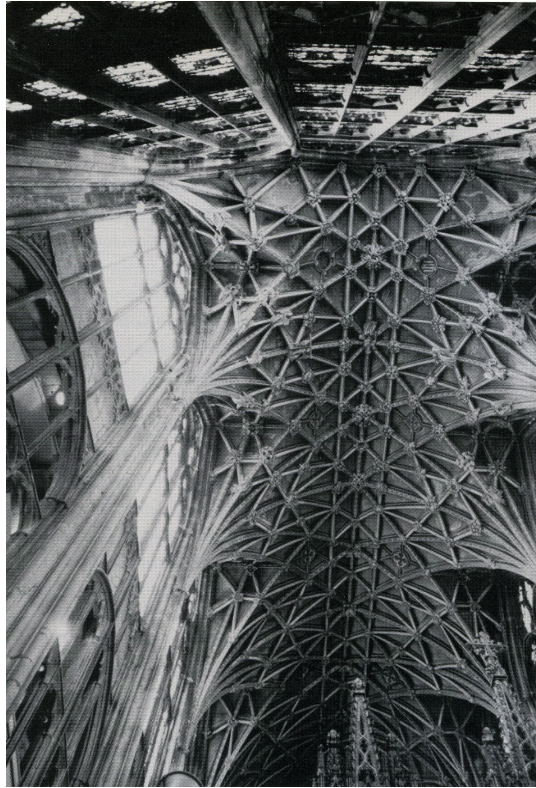
Fig. 2

Fig. 3

Fig. 2: A Block of stone and its trait, from Abraham Boss, Le Patique du trait, 1643. From Robin Evans, *The Projective Cast*, the MIT Press, 1995.

Fig. 3: Gloucester Cathedral, view of choir vault. From Robin Evans, *The Projective Cast*, the MIT Press, 1995. Photo taken by R. Evans.

cal notion of humanism. The shift encompassed new approaches to biology and geometry. Of the latter, projective geometry offered a different way of depicting an object; it gave particular attention to the pragmatics of stonecutting, for example. In *disegno*, instead, what reigns between that which is drawn and the edifice to be realized has to do with imaging. The aforementioned shift had another dimension. In the drawing prepared for stonecutting, the drawing and the projected image of the object are viewed simultaneously. What this means is that a sitting position is required when one is drawing a plan, but a painterly posture is required for contemplating the projected image of an object. For the latter the face has to be positioned parallel to the image, looking at the image directly.

Drawing Painterly

Related to the dual weight of drawing used in stonecutting is Le Corbusier's depiction in light lines of a few basic Platonic geometries at the top of a picture of Roman ruins published in *Vers une Architecture* (1923). It seems that the heavy-looking classical language of architecture was to him nothing but a *mark*. To reveal what is hidden, he introduced the notion of modular, the configuration of which was based on the proportions of the human body. Furthermore, and during his search for a new meaning for architecture, he used the golden ratio as a lineament to decide the scope of openings and the placement of different elements in the façade. The idea of free façade was indeed a means to free architectural imagination from the structural, a formative tectonic element in both Gothic and Greek architecture. Inscribed over the whitewashed surfaces of Le Corbusier's early villas were the metaphysics involved in marking. This was perhaps his way of differentiating the nature of façade drawing from that of the plan; one perceived light, the other was charged with the gravitational forces of construction. One looked with inclined head, the other looked straight ahead.

Apropos of this, one might conclude that Le Corbusier's contribution to modern architecture included the Dom-ino frame - a construction system that allowed architects to reiterate certain aspects of the visual culture of humanism, albeit moulded with the abstract aesthetic of modernism. Of interest is the dialogue Le Corbusier established between the logic of plan and the techniques emulated in painting. Following the proposition that 'the artist proceeds like an architect at the drawing boards'[15], in *Nature morte à la cruche blanche sur fond bleu* (1920), Charles-Édouard Jeanneret's depiction of an open book confirms a one-to-one correspondence between the horizontal (plan) and the vertical views of the book. The association has its architectural correspondence: in both classical and Renaissance buildings, the masonry construction system necessitated a direct projective rapport between the constructive elements of the plan and the building's frontal façade.

To discuss the contemporary implication of the historicity of drawing, outlined thus far, we need to return to Tschumi's drawing. To start with, I would like to suggest that the juxtaposition of a freehand drawing with a digitally reproduced image of the same edifice speaks for architecture's turn to the painterly. What is involved in the flat, two-dimensional and vertically positioned drawing of Tschumi relates to the posture of the painter who more often than not paints while standing in front of and parallel to the canvas. The implied verticality is radicalized in abstract painting. In realist painting the image on canvas is usually perspectival, and an invisible horizontal line connects the three-dimensional image in the canvas to the vertical posture of the painter - to her/his eyes, to be more specific. In abstract painting, instead, the image on canvas does its best to nullify the suggested horizontality, the depth issue in painting, and this at the expense of the surface (the canvas) that is posted vertically. Something similar to the nature of the move from realism to abstract painting works through the shift from freehand to

digital drawing, as will be discussed at length below.

The dual nature of Tschumi's delineation also recalls the drawings used for *trompes*, described earlier in this essay. What makes this comparison relevant to the objectives of this essay is the following. In the case of *trompes*, a three-dimensional object is extrapolated from a two-dimensional drawing. It works from surface to a visualized massing, the stone. Absent in Tschumi's drawing is the depth: as noted earlier, both images are two dimensional, and evoke *surface*. This might relate to the return of the theme of surface in today's architecture.[16] It also says something about the structure of digital reproductivity. Even though the gridded network remains essential to the production of digital image, the latter's mechanism is smart enough to 'erase' its traces (the regulating lines), as the painter and the draughtsman of the past would do.[17] Hannah Higgins reminds us of the ontological rapport between the body and the grid: the proportions of Greek architecture, for example, involved 'harmonious geometrical relationships that, though not displaying the graphically gridded surface created by mortared brick, express a precisely proportional rectangle that is reminiscent of the brick itself'.[18] Thus, what we witness in digital architecture is the emergence of folded surfaces that stretch the building's gridded structure to cover non-orthogonal forms. What should be emphasized is that in spite, or because, of the return of organic forms, Tschumi draws architecture in the coordinate of the vertical and the horizontal. In this sense, his approach to surface is modernist and 'constructive' as far as one is concerned with the aesthetic of theatricalization permeating the work of most contemporary architects.[19] This is also why his freehand drawing is the closest to the project's organizational diagram. The dual nature of Tschumi's drawing reveals two modes of delineation, drawing and *picturing*. This is another dimension of his architectural theory that is explored below. For now we should focus on the concept of picturing and how it works in Tschumi's drawing.

Drawing Pictured

A drawing to be viewed is typically spread horizontally on a table. Painting, on the other hand, is usually placed vertically in front of the observer's face. These observations are made in reference to the distinction Walter Benjamin made between the metaphysics involved in contemplating painting and those of graphic arts. To him there are 'two sections through the substance of the world'[20], vertical and horizontal. Benjamin wrote these lines to support the idea that no matter how radical cubism looks, it still belongs to the realm of painting and not drawing.[21] The orthogonal implied in Benjamin's observation introduces a different dimension to the dialectics of the body and the position of drawing.

Easel paintings hang on a wall and face the viewers who, according to Michael Fried, 'typically stand facing them in a relationship only more perspicuous than it otherwise would be'.[22] The suggested matrix of positionality is based on the vertical posture of the body, and the body's back and forth movement, albeit perpendicular to the body's frontal verticality. This much is clear from Tschumi's free sketch drawing of the *Museu de Arte Contemporânea* where one's spatial experience of the project is anticipated in the depicted elevator and ramp, respectively. From a tectonic point of view, however, 'the vertical is imperative in that it defines and divides the forces of weight, weight being an invariant parameter of all constructive practice, par excellence'.[23] This observation can be taken to highlight the importance of section drawing, and to differentiate the vertical implied in the façade and section drawing from the horizontality implied in the plan.

Through section drawing, the architect examines details and controls architectural spaces in anticipation of construction. As far as the representational nature of drawing is concerned, the longitudinal section can be associated with painting. The cross-section, according to Benjamin, 'seems symbolic; it

contains signs'.[24] Thus, in order to read, write, or contemplate a drawing, we place the paper horizontally and look at it with head inclined. To look at a painting, or to make an engraving on a stone or wall, the surface is positioned vertically and parallel to the gravitational axis of the body. This phenomenon is also implied in section drawing even when the drawing is placed on the table.

Following Benjamin, we can argue that the plan drawing of a building is symbolic. It provides the designer with the means to explore the areas (enclosed spaces), points and lines drawn on the paper. A façade drawing, instead, is a picture to be viewed. As with the face, the façade displays marks that in most cases express something that is not visible, *character* of a building for one, or how the sur-face relates to the structure of a building, for another. Still it is useful to notice that while the façade lives through the life of an edifice, the plan drawings remain invisible. After its erection, and throughout a building's life, the plan drawing is used as a sign; it shows where the load-bearing elements are placed, for instance, or where the leak originates. Likewise, 'a sectional drawing shows the hidden parts of a wall or the settings concealed behind one'.[25] And yet the plan remains essential to the spatial experience of the body moving through the volume of a building. For an era such as the Renaissance, when the body simulated the divine forces on earth, the planimetric organization of architecture followed the orthogonal matrix implied in the horizontal dimension of the floor and the vertical posture of the body. Renaissance architecture was meaningful in its capacity to bring earth and sky together.

In modernity, and since Heinrich Wölfflin's theorization of 'line' as a major index for stylistic differentiation between the Renaissance and Baroque, the horizontal and vertical that structure the difference between plan, façade and section were perceived differently. Introducing the term *malerisch*, Wölfflin claimed that architecture had given up its 'characteristic nature and seeks effects that belong to another art: it becomes painterly'.[26] The transformation initiated a different relationship between architecture, painting, and sculpture established by *disegno*. In various planimetric organizations of his work, Le Corbusier utilized the Dom-ino frame freeing the walls from the orthogonal, or for that matter, any geometric logic ordering the structural system. The lines defining the spatial organization of Villa Savoye, for example, are dictated neither by structural needs nor by other external factors. In the open plan, lines work as markers differentiating one area (locale) from another. Departing from the classical wisdom of walls, the lines marking an open plan approach the painterly, as understood in abstract painting, even though space in depth and space enclosed remain essential for differentiating modern painting from architecture. Freed from the dictums of a masonry organization of the plan, the façades of Villa Savoye stand like a painterly surface.

Architecture's move into the realm of painterly was not a stylistic choice. It was induced by technology, one implication of which was of representational nature. Even computer graphics, according to Alberto Pérez-Gómez, is not 'the equivalent of a pencil or a chisel that could easily allow one to transcend reduction. It is the culmination of the objectifying mentality of modernity and it is, therefore, inherently perspectival'.[27] The scope and the implication of digitalization are better understood if one recalls Martin Heidegger's discourse on 'world picture'. According to this German thinker, the modern age is unique in its characteristic way of turning everything, both natural and cultural, into an 'object', set before a subject that is liberated from his/her own historical attributes. What is involved in this historical transformation, dating back roughly to the beginning of the eighteenth century, is the emergence of a structured rapport between subject, object, and technology, which projects the world as
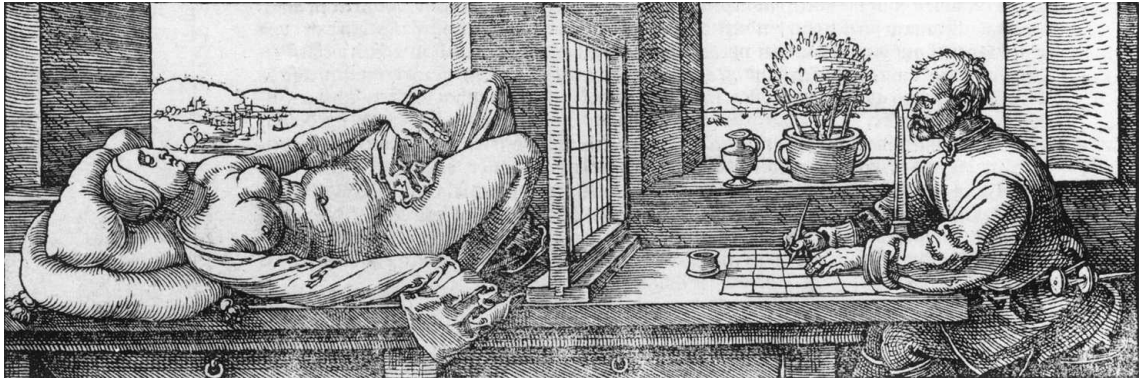
Fig. 4: Albert Durer, Draftsman drawing a reclining nude, c. 1527, woodcut.

picture. Thus, we arrive at Heidegger's conclusion that the 'fundamental event of the modern age is the conquest of the world as picture'. The latter alludes to 'the structured image [*Gebild*] that is the creature of man's producing which represents and sets before'.[28] The Heidegger of 1938, however, was not in a position to see how the subject would soon be internalized into the alleged 'structured image'. This was perhaps one reason why he took up the question concerning technology in the 1950s when technology had already moved into the realm of cultural, and the 'structured image' entered into the era of *spectacle*, and 'image building'.[29]

In order to show the operative nature of perspectival regime even when an architect is drawing in a seated position in front of a computer, it is useful to recall Albrecht Dürer's 1525 demonstration where a wooden frame is covered with a grid of black threads containing an eyepiece [fig. 4]. The ensemble allowed an artist to replicate the scene onto a drawing surface ruled with a matching grid. The association has a further connotation. The digital industry's inclination to reduce the volume of the magic box to a thin screen speaks for both an advanced state of programming and a degree of velocity that outdoes the architect's nostalgia for the slow process of freehand drawing. Of further interest is the disappearance of the subject matter, where one is seated opposite the artist as shown in Dürer's demonstration of the roles engaged in perspective drawing. Absent in the digital means of drawing is the visibility of the vanishing point, one task of which was/is to reduce the multidimensionality of an object to a geometrical image. Another task relates to the necessary coordination between the spectator's position and both the eye of the draughtsperson and the vanishing point. This demonstrates a shift away from the everyday life associated with the divine forces towards 'the experimental method associated with the Scientific Revolution'.[30] All these vanished material aspects of Dürer's machine are virtually reprogrammed in computer softwares, the

depth of which is accessible at the touch of a button or two.

In the computer drawing, there is an uninterrupted visual dialogue which takes place between the eyes of the draughtsperson and the screen. Whilst in Dürer's demonstration the seated artist looks straight at the screen before him, to draw the image on paper laid horizontally on the table he has to incline his head. Such a dual movement in the position of the body is rectified in the realist painting, as suggested earlier, where the head of the painter more often than not remains erect, looking straight either at the image on the canvas, or at the subject posed in front of the painter. Whilst such a painterly position of the artist and the image depicted on canvas recalls the architect's seated position in front of a computer, one is reminded of a few contemporary painters, Jackson Pollock for one, whose technique of 'dripping' contested the structure of the painterly.

Now what should one make out of the discussion presented here? For one thing, the vertical and horizontal are essential to our very perception of an object, either drawn or painted. Secondly, even though technological changes influence our perceptual realm, these techniques are not yet able to dismantle the orthogonal built into the perspectival regime. And finally, using the filmic technique of montage, Tschumi is one of the few architects who have been able to produce a body of work that does not attend the visual spectacle permeating digital architecture. To support this last claim we need to turn once more to *The Manhattan Transcripts*.

Starting with four sequential scenarios, the filmic montage in *The Manhattan Transcripts* emerges through the book as the technique that protects architecture from the aesthetic consequences of the technification (digitalization) of architecture. Elsewhere I have discussed the criticality of *objectivity* for Tschumi's architecture.[31] What this means
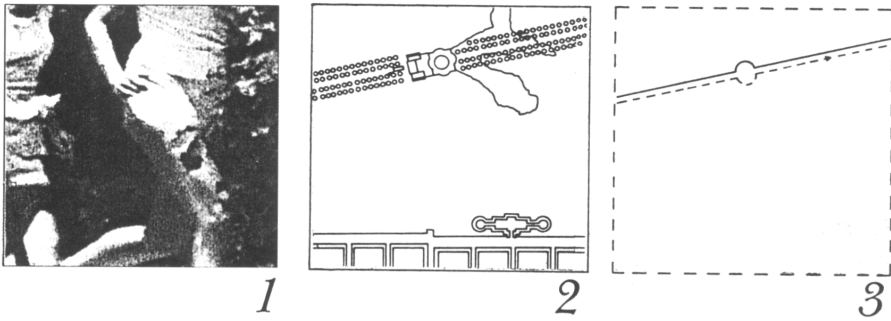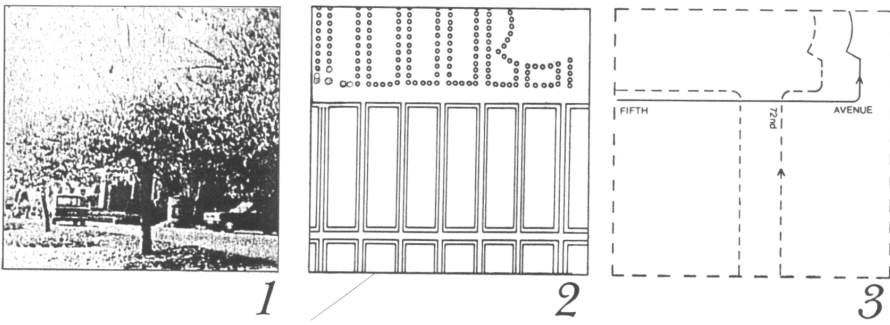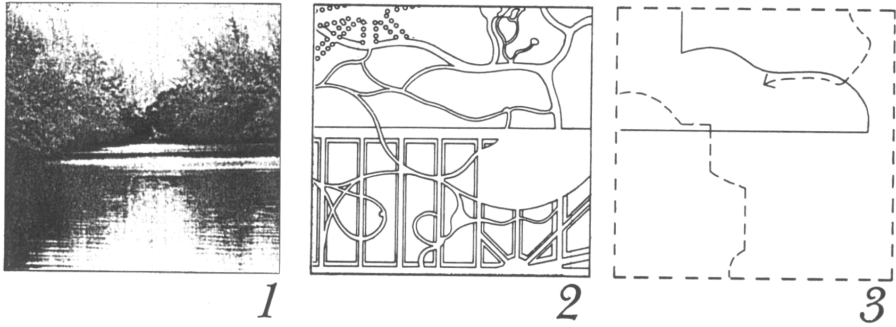
Fig. 5: Extract from *Manifesto*. Image courtesy of Bernard Tschumi Architects, New York City.

is that instead of following the fashionable path of deconstructing the vertical structure of architecture through folded planes, Tschumi tries to deconstruct that which is essential to the engagement of the body in and through architecture. This is evident from the aforementioned four scenarios denoting the park, the street, the tower, and the block. Speaking in terms of diagram, these four themes stand for *plane*, *line* (horizontal), *line* (vertical), and *orthogonal*. The idea is to challenge the presumed neutrality of the three themes of movement, programme, and event to the point that each becomes a constructive force for rethinking architecture and the city beyond strategies that are mainly focused on form either through abstraction or simulation.[32] What makes these three themes important is their ability to re-engage the body with a different tactile and spatial sensibility as one experiences the disjunctions grafted into the conventional performance of these themes.

In the same way as a film director, Tschumi plots architecture through transcripts, and with drawings that are not architectural. The role of *transcripts* 'is never to represent; they are not mimetic', and their ordering principle has little to do with reality, but more with 'the internal logic these sequences display'.[33] Following what he calls the 'three-square principle', each of the above-mentioned four scenarios is plotted in three successive frames, horizontally and vertically [fig. 5]. Each page covering the theme of the park, for example, displays nine squares, the narrative of which runs first horizontally and then vertically. To go beyond a formal investigation (Colin Rowe), or a deconstruction of architectural form (Peter Eisenman), Tschumi dispensed even with his own three-square principle, as the next set of transcripts involves the city directly. The final transcripts reveal a montage of *cuts*, each denoting experimental aspects of the four episodes. Again, in filmic analogy, the final meaning of each cut cannot be understood independently of its context. In MT 4 [fig. 6], for example, 'a horizontal, internal relation

occurs within each level'. Tschumi writes: 'This relation may be continuous and logical; it can also jump from one frame to the adjacent and fully incompatible one, creating an integral disjunction.'[34] Furthermore, the vertical and the horizontal structures informing Tschumi's transcripts inevitably infiltrate the narrative of his text. The vertical notations that stand for the sequence of drawings interrupt the horizontal flow of the final pages of his introductory remarks. The disjunction suggests that drawing does not represent architecture. Rather does it expose its internal logic, which is also informed by programme, movement, and *event*.

In *The Manhattan Transcripts*, Tschumi presents an alternative approach to the bodily experience of architecture against a conservative interpretation of architectural phenomenology. Using the technique of montage and photomontage, and taking advantage of a Benjaminian discussion of the role technology plays in human perception, Tschumi's drawings were indeed responding to the ambiguity internal to architectural phenomenology. Having explored the many facets of the subject during architecture's turn to the postmodern, Jorge Otero-Pailos concludes that, 'within architectural phenomenology, technology functioned as both the enabling element and the dividing rift between the matters of intellectualism and experience'.[35] Whereas in some circles of phenomenology a centrally placed body was sought as a remedy to the divide created by technology, Tschumi's theorization of architecture opted for a non-essentialist approach to the body and experience. Drawing conclusions from the work of Russian constructivists, Tschumi welcomed distraction and disjunction in analogy to the sensual experiences induced by filmic montage. In this, he was also benefiting from the traditions of the avant-garde of the 1920s. To challenge the meaning given to the picture of reality, photomontage is used to juxtapose 'image with image, or image with drawing, or image with text'.[36] If architecture once had to imitate the body and nature, the technification of
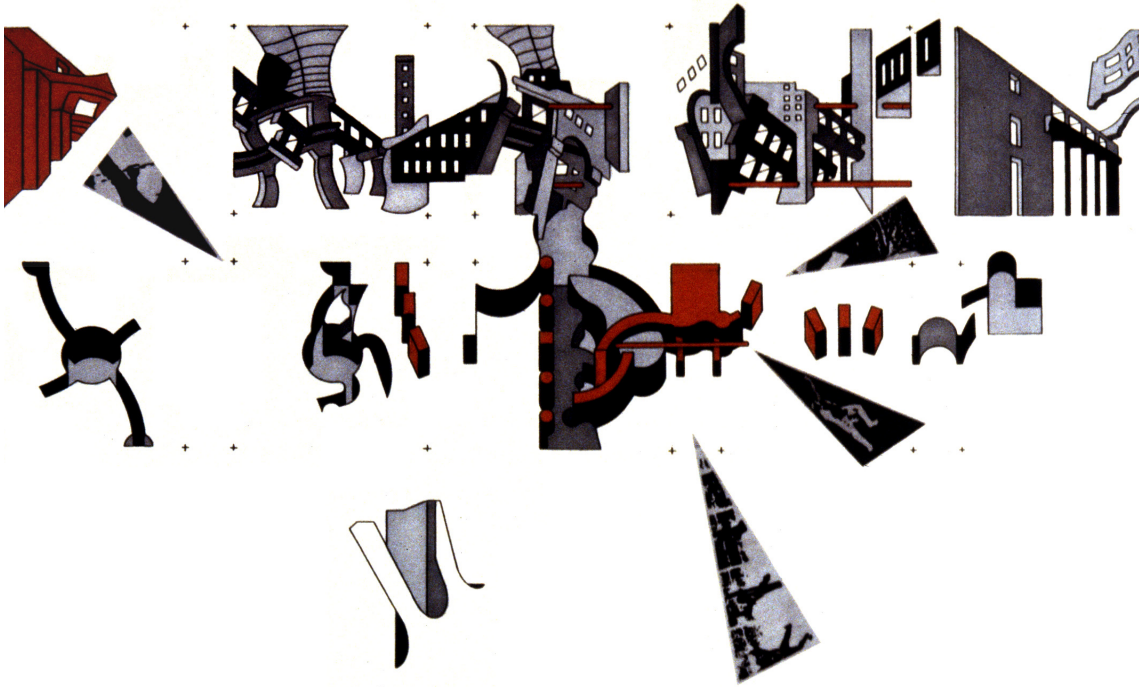
Fig. 6: Extract from MT 4, The Block. Image courtesy of Bernard Tschumi Architects, New York City.

everyday life has introduced a third nature (technique) to be assimilated into architecture. Gone in the old equation was the tactile aspect of architectural experience, a subject Benjamin highlighted at the end of his famous art essay work.[37]

Now, what conclusions should we draw from Tschumi's drawing prepared for the *Museu de Arte Contemporânea*? In the first place, the drawing speaks for the architect's departure from his theorization of architecture as discussed in *The Manhattan Transcripts*. We read on the final page of the book how important its themes were for the realization of two early projects, *Parc de la Villette* and *Le Fresnoy*.[38] The suggested departure, however, goes halfway towards the full implementation of the formal and aesthetic impact of the digitalization of architecture. This claim is based on a general observation that as of today Tschumi's architecture avoids following the organic forms and the aesthetic of theatricalization evident in most of today's architecture of folding surfaces. Tschumi shortcuts the architect's passive engagement with the available digitally programmed images. This is a struggle 'between the predilection of the architect and the inherent properties of the geometries encountered'[39] and what rests deep within major 3D modelling softwares. Tschumi sees no reason to smooth the conflict experienced between the sensual pleasure of space and that of order.[40]

Secondly, the aforementioned drawings suggest that the architect has not yet abandoned the formal and aesthetic implication of the 'right angle' for the visual and sensual experience of the body. In putting a freehand drawing next to a digital image, Tschumi reveals a temporal conflict. Pencil in hand and having no concern for time experienced through digital velocity, Tschumi recalls the slow processes of architectural creativity rooted in the *metier* of draughtsmanship. The juxtaposition also wants to balance the mental life and the perceptual horizon of an architect seated in front of a computer,

whereby the machine frames the space/time involved in the drawing. Tschumi's freehand drawing resists the homogenization of form, at least at an aesthetic level, evident in diverse products of the present culture of spectacle. This might explain why Tschumi draws architecture and designs projects in which the coordinates of *grid*[41] bring together the body and architectural experience in a non-totalized form understood in terms of either the temptation to express the spirit of a digital age, or the humanist notion of the architecture and the body.

Notes

1. See footnote 20 here.
2. Here I am benefiting from Jacques Rancière, *The Future of the Image* (London: Verso, 2007), p. 11.
3. The following pages benefit from this author's 'The Drawing Position', *Architectural Theory Review*, 14:3 (2009), pp. 248-259.
4. James S. Ackerman, *Origins, Imitations, Conventions* (Cambridge: The MIT Press, 2002), p. 16.
5. David Leatherbarrow, 'Showing What Otherwise Hides Itself', *Harvard Design Magazine*, (Fall 1998), p. 51.
6. I am paraphrasing Leonardo da Vinci quoted in Robert Williams, *Art, Theory and Culture in Sixteenth Century Italy* (Cambridge: Cambridge University Press, 1997), p. 16.
7. On this subject, see Gevork Hartoonian, *Ontology of Construction* (Cambridge: Cambridge University Press, 1994).
8. Leon Battista Alberti, *On the Art of Building in Ten Books*, trans. by J. Rykwert, N. Leach and R. Tavernor (Cambridge, MA: The MIT Press, 1988), p. 34.
9. Robert Williams, 1997, p. 75.
10. Alina Payne, *The Architectural Treatises in the Italian Renaissance* (Cambridge: Cambridge University Press, 1999), p. 68.
11. Robin Evans, *The Projective Cast* (Cambridge: The MIT Press, 1995), p. 180.
12. Robin Evans, 1995, p. 206.
13. Robin Evans, 1995, pp. 220-39.
14. Bernard Cache, 'Gottfried Semper: Stereotomy,

Biology, and Geometry', *Perspecta* 33, 'Mining Autonomy', (2002), p. 86.

15. Stanislaus von Moos, *Album La Roche* (New York: The Mocacelli Press, 2008), p. 55.

16. On this subject, see Gevork Hartoonian, *Crisis of the Object* (London: Routledge, 2006).

17. Here I am benefiting from Hannah B. Higgins, *The Grid Book* (Cambridge: The MIT Press, 2009).

18. Higgins, 2009, p. 24.

19. On this subject see Gevork Hartoonian, 2004, in particular the chapter on Bernard Tschumi.

20. Walter Benjamin, 'Painting and Graphic Arts' in *Walter Benjamin, Selected Writings, Volume 1: 1913-1926*, ed. by M. Bullock & M. W. Jennings (Cambridge: Harvard University Press, 1996), p. 82.

21. Yve-Alain Bois, *Painting as a Model* (Cambridge, MA: The MIT Press, 1999), p. 179.

22. Michael Fried, *Why Photography Matters as Art as Never Before* (New Haven: Yale University Press, 2008), p. 148.

23. J. Guillerme, H. Vérin, and S. Sartarelli, 'The Archaeology of Section', *Perspecta* 25 (1989), p. 238.

24. Walter Benjamin, 1996, p. 82.

25. David Leatherbarrow, (Fall 1998), p. 52.

26. Quoted in Alina Payne, 'Architecture, Ornament and Pictorialism: Notes on the Relationship Between the Arts from Wölfflin to Le Corbusier' in *The Built Surface Volume 2*, ed. by Karen Koehler, (London: Ashgate Publishing Limited, 2002), p. 57.

27. Alberto Pérez-Gómez, 'Question of representation: the poetic origin of architecture' in *From Models to Drawings*, ed. by M. Frascari, J. Hale and B. Starkey, (London: Routledge, 2007), p. 21.

28. Martin Heidegger, 'The Age of the World Picture', trans. by W. Lovitt, *The Question Concerning Technology and Other Essays* (New York, Harper & Row Publishers, 1977), p. 134.

29. I am thinking of Guy Debord, *The Society of Spectacle*, trans. by D. Nicholson-Smith, (New York: Zone Books, 1995), and Hal Foster, 'Image Building', *Artforum* vol. 43, no. 2 (October 2004), republished in Anthony Vidler ed., *Architecture Between Spectacle and Use* (New Haven: Yale University Press, 2008), pp. 164-79.

30. Higgins, 2009, p. 169.

31. Gevork Hartoonian, *Crisis of the Object*, 2006, especially chapter 4. See also K. Michael Hays, 'Spacing' in *Architecture's Desire, Reading the Late Avant-Garde* (Cambridge: The MIT Press, 2010), pp. 135-69.

32. Bernard Tschumi, *The Manhattan Transcripts* (London: Academy Editions, 1981), p. 7.

33. Tschumi, 1981, p. 8.

34. Tschumi, 1981, p. 11.

35. Jorge Otero-Pailos, *Architecture's Historical Turn: Phenomenology and the Rise of the Postmodern* (Minneapolis: the University of Minnesota Press, 2010), p. 254.

36. Rosalind E. Krauss, *The Originality of the Avant-Garde and Other Modernist Myths* (Cambridge: The MIT Press, 1986), p 21.

37. Walter Benjamin, 'The Work of Art in the Age of Mechanical Reproduction' in ed. by Hannah Arendt, *Illuminations* (New York: Schocken Books, 1969), pp. 217-64.

38. For this author's discussion of these two projects, see footnote 29 above.

39. Aranda/Lasch, *Tooling* (New York: Princeton Architectural Press, 2006), p. 9.

40. Tschumi, 1994, p. XXVIII.

41. Here I am using *grid* as discussed by Rosalind Krauss, 1986, pp. 9-22. Taking up the structuralist interpretation of the cultural, Krauss suggests that grids serve as myth if only to 'deal with contradictions', p. 13.

Biography

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