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Drawing as Architectural Construction

By

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## Abstract

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The architect's foremost method of conceiving an architectural idea is the act of drawing. The development of an architectural idea follows the rules and limitations set out by a design process. This process typically begins on the surface of the drafting board, within the realm of the drawing. Aided by drafting tools and instruments, the architect can begin to construct the architectural idea. The idea is then continuously developed, drawn, and re-drawn.

It is the process of drawing that first prompted the development of this thesis. My interest is in the realisation that the drawing of architecture does not occur in a neutral environment free of outside influences. The very method, the tools and instruments used in the process have an influence over the final product regardless of how imperceptible their pressures may be. The act of drawing and the conventions of architectural drawing must be considered critically for the role they play in the design process and not simply as instruments of production. The need to reflect on the act of drawing has become even more relevant with the advent of digital drawing programs.

My recognition of the intimate relationship between the act of drawing and the means of drawing has led to the hypothesis that every project of architecture requires a unique drawing method, even drawing tools and instruments. The goal of a highly tailored drawing process is to produce drawings that are consistent with the project rather than drawings that succumb to the influences of a prescribed convention.

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Many thanks to those who spent the last six years learning and struggling along with me. Thank you to Federica Goffi and Steve Fai for your invaluable advice and guidance. I would especially like to thank Erin for her unconditional support and patience.

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During a time when the production of hand drawn architectural drawings is being threatened by a wave of technological change, a question rises - what is there behind the hand drawing that makes it so indispensable to the production of built architecture and how might these qualities be upheld in today's context?

While it might be easy to assume that an architectural drawing is merely the depiction of what a future construction will look like, real architectural drawing occurs when an architect uses the 'process' of drawing to *create* architecture. The purpose of an architectural drawing is to play host to actual creation and the coming together of parts. Marco Frascari makes this very clear in an essay about the role of paper within architectural 'factures'.

"... The material reactions between papers and inks plays a key part in the making of drawings. These material reactions are necessary ingredients of the *facture* of any architectural image, since drawings are not the simulacra of works of architecture to be built, restored or modified, but they are works of architecture in themselves."<sup>1</sup>

The 'facture' is a necessary element to understanding what is particular to architectural drawing. Frascari writes about the architectural drawing, as a 'record of its own having-been-made,'<sup>2</sup> a quality not found in other forms of drawing. This quality is what distinguishes architectural

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<sup>1</sup> Frascari, Marco. "A reflection on paper and its virtues within the material and invisible *factures* of architecture" *Models and Drawings*. Routledge, 2007. p.26

<sup>2</sup> op. cit. Frascari, Marco. 2007. p.23

drawing as well as what bestows upon it so much importance in the practice of making architecture. While discussing the 'enormous generative part played by architectural drawing', Robin Evans recounts his experiences teaching in an art college:

"Bringing with me the conviction that architecture and the visual arts were closely allied, I was soon struck by what seemed at the time the peculiar disadvantage under which architects labour, never working directly with the object of their thought, always working at it through some intervening medium, almost always the drawing, while painters and sculptors, who might spend some time on preliminary sketches and maquettes, all end up working on the thing itself which, naturally, absorbed most of their attention and effort."<sup>3</sup>

Evans later goes on to explain how the gap between the drawing and the building may actually be used as an *advantage*, but one might argue, in light of Frascari's position, that while working on the drawing architects *are* in fact working on 'the thing itself'. This notion does not reunite architecture back with the other visual arts nor does it devalue the gap between the drawing and the building but rather it merely establishes that the making of architecture begins with the drawing and continues through the translation into built form.

While the drawing is the site of architectural making, that making does not occur in a sterile environment. The 'material reactions between papers and inks'<sup>4</sup> and the ways in which they are combined to create these architectural factures are in themselves influential and have the ability to steer the design process in a specific direction. The drawing tools and instruments

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<sup>3</sup> Evans, Robin. "Translations from Drawing to Building". *Translations from Drawing to Building and Other Essays*. The MIT Press, 1997 p.156

<sup>4</sup> Frascari, Marco. "A reflection on paper and its virtues within the material and invisible factures of architecture" *Models and Drawings*. Routledge, 2007. p.26

used to guide and control the combination of these materials have a significant impact on the outcome of the design itself. Robin Evans describes this process in relation to the concept of projection and how drawing instruments combined with technique can nearly dictate the form of a building.

“A plan, which can be any shape, may tend to be rectangular for a host of reasons, but the internal logic of parallel projection will push it that way too. Five minutes at a drawing board will convince anyone unfamiliar with the technique that this is the way things have to be set out. The instruments at your disposal will lead you to produce frontal pictures of the several sides of boxes as soon as you have gained the slightest idea of what you are doing. It is easiest to deal with the three types of drawing if they are perpendicular to each other, and it is easiest to align the principal surfaces of an object with the surfaces on which it is drawn; in consequence, a building will be a box in a box of pictures. So planar, rectangular form is economical too, within the confines of the technique.”<sup>5</sup>

It is the sense of the most ‘economical’ way of doing things -within the context of the tools and/or instruments selected- which stealthily guides the design process without the architect even becoming aware that he or she is being guided. The constant tendency towards the most ‘economical’ path becomes just as dangerous, if not more so, when drawing takes place in the realm of digital drawing programs. The constant strive for computer programs to become increasingly ‘intuitive’ is leading to not only predetermined layouts in which to ‘draw’ but also to assumptions as to what functions the architect will use and make them readily available or more ‘economical’. Programs such as ‘Sketch-Up’ will try and guess the user’s next move by suggesting an action without the user even having to select it. While other alternate actions may be used, the user is saved the trouble of choosing the next move by opting to use the action readily available. A simple example of this would be

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<sup>5</sup> Evans, Robin. *The Projective Cast: Architecture and Its Three Geometries*. MIT Press, 1995. p118-119

the 'line' command. The line function will only produce perfectly straight lines and will most often 'snap' to an orthogonal grid. If the user wishes to produce curved or angled lines, this can be achieved but not without significant effort and preconceived notion of what type of curve or angle will be drawn. Of course it is possible to use these programs to fabricate the same designs that have been fabricated using other methods, the point is that if these programs are used in the design stage, the influence they have can direct the design into a course dictated to a certain degree by software rather than the architect's imagination. This way of working leads to design solutions that have all been passed through the same 'intuitive' matrix which produces the same 'intuitive' results.

These programs are not only dangerous due to their 'intuitive' nature allowing the 'easiest' method of production, but for the much more serious reason that they are neglecting the very nature of architectural drawing. Without the 'material reactions' required to produce an architectural drawing, when using drawing program, essentially, no drawing even exists. Frascari describes the use of the 'electronic screens' as: "the practice of imitating the past-an imitation which does not model the process but only mimics the products."<sup>6</sup> The process that is being discussed requires the involvement of 'papers and inks', without which drawings are not drawn. However, those materials, tools and instruments carry certain influences in themselves.

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<sup>6</sup> Frascari, Marco. "The Drafting Knife and the Pen", *Implementing architecture: exposing the paradigm surrounding the implements and the implementation of architecture*. Atlanta, Nexus Press, 1988 p.8

What is being hypothesized is that by intentionally selecting the materials, tools, instruments and drawing methods with regard to the architecture being made rather than succumbing to the most 'economical' route, it is possible to create an architectural facture untainted by conventional influences.

The 'material reactions' that are so crucial to architectural drawing are not a direct translation of the architect's intentions. These materials are mediated by the physical objects used to deploy them. These physical objects do not, however, all interface with the architect in the same manner. The differences between these manners are what determine different drawing techniques as well as the different influences these objects will have over the one using them.

Throughout this thesis three different types of drawing equipment will be discussed; tools, instruments, and machines. Each type has a different way of guiding the drawing process and a different way of interfacing with the user.

A tool, with reference to drawing, has a direct relationship with the user, void of intervention. The influence imposed by the tool is limited to the properties of the tool itself.

"The drawing pen is, then, a knife with which architects cut through buildings-that is, the tool with which they write the story of their buildings."<sup>7</sup>

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<sup>7</sup> Frascari, Marco. "The Drafting Knife and the Pen", *Implementing architecture: exposing the paradigm surrounding the implements and the implementation of architecture*. Atlanta, Nexus Press, 1988. p.5

Both the knife and the pen are simple objects which possess relatively straightforward properties. The knife boasts the property of cutting and therefore revealing, the pen; the property of writing which can also, as Frascari has stated, reveal. The actions of cutting and writing are not only demonstrated as being metaphorically similar but are also both the physical result of a direct translation of the intention of the user mediated by the tool. Without the knife the action of cutting would not result in a cut. In the same sense, if one were to cut with a dull knife in place of sharp knife the resulting cut would differ, and possibly so would what is revealed. In this way the properties of the tool can determine, to a degree, the product of its use.

Referring again to the same essay, *The Drafting Knife and Pen*, the interpretation of the tool can reside at multiple levels in the drawing process. "Architectural drawings are tools which make tangible what is intangible"<sup>8</sup> This property of 'making tangible' is a common theme that can be applied to drawing tools at any level in the drawing process; a pen makes tangible the motion of the hand through a 'material reaction between paper and ink', or in other words through a line. The architectural drawing also has a direct relationship with the user, communicating only what has been drawn, exactly how it was drawn. There is no intervening medium, and therefore the drawing itself can also be viewed as a tool.

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<sup>8</sup>Frascari, Marco. "The Drafting Knife and the Pen", *Implementing architecture: exposing the paradigm surrounding the implements and the implementation of architecture*. Atlanta, Nexus Press, 1988. p.8

An instrument, on the other hand, is defined by the fact that it interfaces through its own notational system. The user generates the output through a filtered predefined set of actions.

A musical instrument, for example, can only be used by conforming to the language of musical notation. The keys on a saxophone or the frets on a guitar are relative to the notational system which one must perform through in order to use the instrument. The notational system will add another form of influence. Not only are the inherent properties of the instrument asserting their influence, but those properties can only be accessed through a specific set of operations.

With reference to drawing, the instrument becomes an important part of the creative process. Paper, which plays a key role in the creation of an architectural drawing, exercises its influence through the notational system chosen to access its potential. The inherent peculiar material properties of paper also play a role, influencing the drawing being produced. Whether one draws on a sheet of heavy bristol or a piece of vellum the material reaction will differ. Although Frascari refers to paper as a 'passive instrument' as opposed to an 'active instrument such as the printing press', he asserts its key role in the making of architectural drawings;<sup>9</sup>

"Regrettably, many architects and design critics perceive paper as merely a passive support to the finished drawing, since they do not realize that during the drafting procedure,

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<sup>9</sup> Frascari, Marco. "A reflection on paper and its virtues within the material and invisible *factures* of architecture" *Models and Drawings*. Routledge, 2007. p.23

subtle manipulations and changes in the paper play an influential continuo-counterpoint, essential for the play of an architect's imagination. The assortment of drafting papers cannot be deemed as mere supports for architectural representations, but rather their very materiality should be considered as part of the dynamic characteristic of the architectural *facture*"<sup>10</sup>

This 'dynamic characteristic', when speaking of tools and instruments, is then the sum of all the influences of the various pieces of drawing equipment used in constructing an architectural drawing.

The machine is defined by its inherent sense of order. The user utilizes the machine's relationships within that order. In *The Macaronic Dream of Villa Girasole*, Frascari speaks of Rocca Pisana and Casa Girasole, two Italian villas with strong relationships to the cosmos, as 'machines':

"They are cosmological representations that transgress the barrier separating material and immaterial existence, to create an intimate relation between men and gods. Of paramount importance to the cosmological representation is the sense of a motor force linking human action to a divine destiny."<sup>11</sup>

The villas which Frascari speaks of demonstrate the inherent order present in the cosmos by creating a experiential effect through the use of light and shadow. When speaking of drawing machines, the 'divine destiny', or sense of order, is revealed by the inherent properties of the machine. These properties are imposed on the user through interfacing with the machine. The machine imposes this sense of order through restrictions and limitations present in it's own geometry.

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<sup>10</sup>Frascari, Marco. "A reflection on paper and its virtues within the material and invisible *factures* of architecture" *Models and Drawings*. Routledge, 2007. p.23

<sup>11</sup> Frascari, Marco. "The Macaronic Dream of Villa Girasole" *Casa Girasole*. Chronicle Books, 2005. p.2

The parallel rule affixed to a drafting board does not have a drawing point, nor is it able to move freely in any direction. The parallel rule is a machine which imposes its limitation (the horizontal reference) upon drawing tools and instruments by adhering to its absolute horizontal position. This condition is used to the advantage of the drawer who uses its constant properties to guide the production of the drawing. These limits can, as in the example given by Robin Evans of parallel projection, lead to the near dictation of form especially once combined with a drawing technique.

Alan Storey, a man who builds drawing machines which rely heavily on their surroundings describes his machines as:

“... a medium (motorized or not, and from a technological viewpoint, knowledgeably tinkered more than refined) that evokes the obvious and the banal in an unexpected manner: the graphic network is revelatory of a reality which escapes our sight (that is, one lying so close under our noses that we can't even see it), but which is perceptible on a daily basis through its effects.”<sup>12</sup>

The ‘revealing of a reality which escapes our sight’ or the ‘making tangible what is intangible’ is the common thread, which runs between tools, instruments and machines. However, the specific way in which each interfaces with the user will determine how and to what degree the drawing equipment will influence the resulting product.

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<sup>12</sup> Storey, Alan. *Drawing Machines*. Centre Culturel Canadien, Paris, 1999. p.14-16



**Figure 1** Custom Set Squares, I.M. Pei, acrylic

I.M. Pei; East Wing of the National Gallery in Washington D.C.

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Triangle set squares have been used by architects since the seventeenth century as guides for drawing at specific angles. Common triangles found in these early tool cases consisted of a 30°/60° and a 45° version.<sup>13</sup> The simplicity of the number combinations makes adding angles fairly effortless and their role in drawing isometric and axonometric

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<sup>13</sup> Hambly, Maya. *Drawing Instruments 1580-1980*. Sotheby's, London. 1988. p. 105

projections is essential. The convention of 30°/60° and 45° triangles remains the standard format for set squares to this day.<sup>14</sup>

In the development of the East building of the National Gallery in Washington, I.M. Pei used the inherent properties of the set square as a guiding force behind the design. Throughout an architectural career filled with geometric obsession, including buildings such as the Louvre expansion in Paris and Bank of China Tower in Hong Kong, Pei has relied heavily upon angles to guide the production of his architecture. In the production of the East Wing of the National Gallery, however these angles were manifest into an actual drawing tool, a customized triangle set square.

The National Gallery in Washington required an expansion to house a new modern art wing. The neoclassical building which houses the original collection was deemed too restrictive for the space requirements necessary to display modern art. The center also needed a space for learning which could work alongside the gallery. This space would serve as an area where the researchers could work within close proximity to their subject matter.<sup>15</sup>

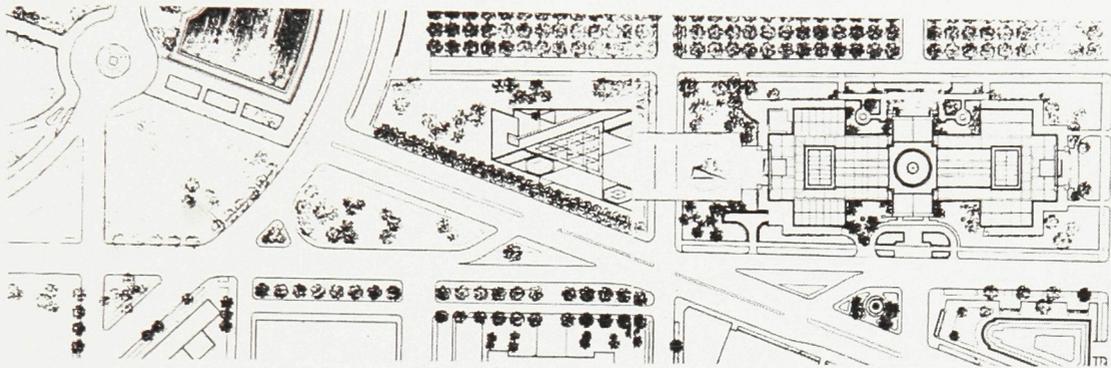
The site designated for the new wing was a trapezoidal shaped plot opposite the façade of the original gallery building. The program required the

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<sup>14</sup> The inherent properties provided by the triangle are the angles at which it is fabricated. These angles are the sole influence the triangle has over the user.

<sup>15</sup> Wiseman, Carter. *I.M. Pei: A Profile in American Architecture*. New York, Harry N. Abrams, 1990. p. 155-157

splitting of the building into two distinct parts (the gallery and the learning centre); however, the main façade would have to remain symmetrical in order to respond to the original gallery building directly opposite. Pei's approach was a geometrical division of the site into two triangles by means of a very specific angle based on the nature of the site.<sup>16</sup>



**Figure 2.** Site Plan, National Gallery of Art, Washington D.C.

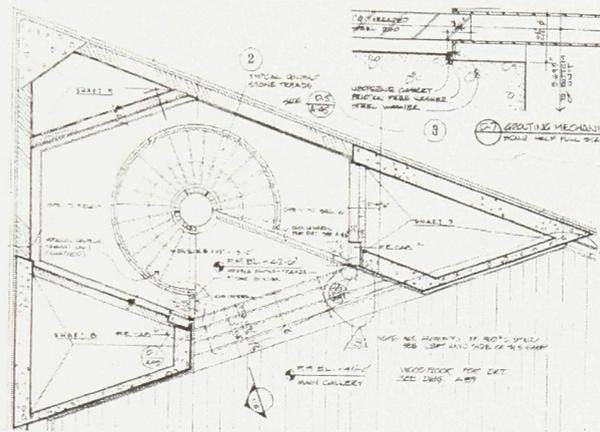
The two parts were each comprised of a triangle; a right angled one and an isosceles one (fig. 2). The exact angles of these two triangle shaped fragments were derived directly from the geometry of the site and the program requirement to slice through it. The angle was a crucial element of the design because all structure, circulation and every other architectural move would have to yield to it.

Due to the fact that standard set squares are manufactured at 30°/60° and 45° and adjustable triangles were deemed 'too unreliable', Pei had custom triangles manufactured at 19.4731440° and 70.536856° (fig. 1) in

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<sup>16</sup>Wiseman, Carter. *I.M. Pei: A Profile in American Architecture*. New York, Harry N. Abrams, 1990. p.162-167

order to facilitate the drawing of the plans at the new angles<sup>17</sup>. The influence of the architectural tool becomes pertinent at this point. The choice to custom manufacture the tool (and thus alter its only inherent property relevant to the process of drawing) immediately rejected the conventional influence of standard triangles and harnessed the influence capable of a tool.



**Figure 3.** Plan Detail, National Gallery of Art

This allows the tool to guide the design in a direction determined by the architect. Although this drawing tool was not the only influence present during the conception of the design and only one part of the drawing equipment used to produce the drawings for the gallery, the influence it had was apparent in the results (fig. 3).

The choice to manufacture custom set squares to reproduce an angle that was known to be a key component of the design may not seem to be a

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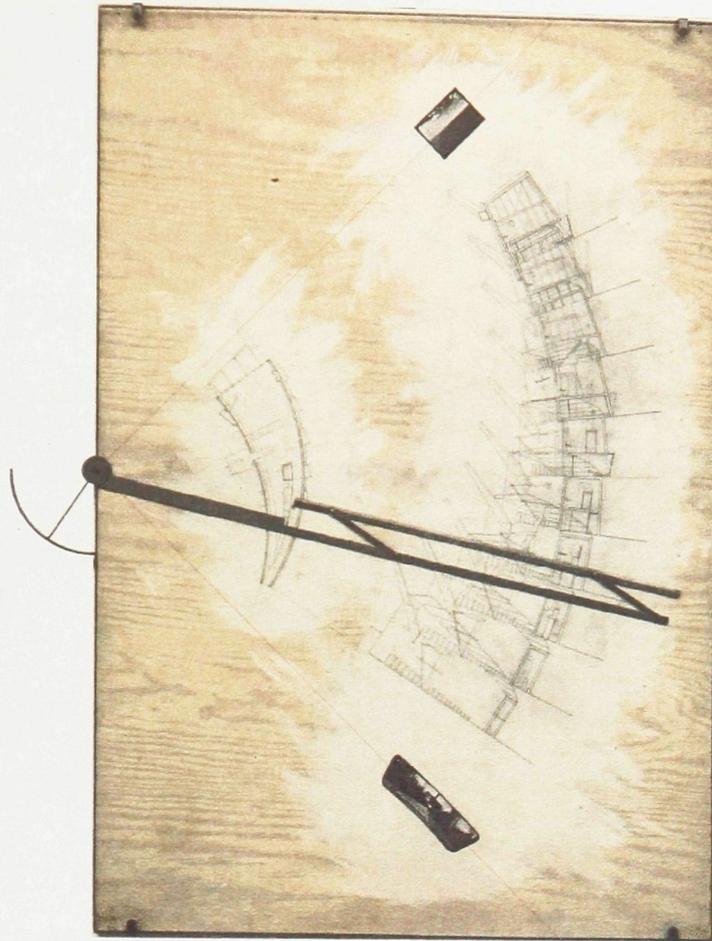
<sup>17</sup> Piedmont-Palladio, Susan C. *Tools of the Imagination*. New York, Princeton Architectural Press, 2007 p.41

significant move in terms of design, however it reveals that Pei acknowledged the amount of influence and authority which can be stored in a drawing tool.

After the building was completed the triangles were never used again. They had been stored with the architectural drawings in the archives of the gallery until all the drawings were converted to digital files, at which point the triangles were assumed to have no further use.<sup>18</sup> The abandoning of the custom tool after the project was completed only reinforces its value. If the tool had remained in the office or had been used for other projects it too would have risked becoming a convention and imposing its specific influence over unassuming projects.

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<sup>18</sup> Piedmont-Palladio, Susan C. *Tools of the Imagination*. New York, Princeton Architectural Press, 2007 p.41



**Figure 4.** Plan/Section Drawing , Slow House

Diller + Scofidio: Slow House

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Parallel rules affixed to a drafting board are a fairly recent invention relative to most pieces of drawing equipment. The concept behind parallel rules had its beginnings in early perspective machines but a parallel rule used in the drawing process which was affixed to the drawing surface did not

appear until 1924 when W. F. Stanley started producing an early model guided by piano wires.<sup>19</sup>

The ever-present nature of the parallel rule, due to the fact that it is attached to the drawing surface, makes its influence nearly unavoidable. Where the influence a tool such as a pen exerts only exists when the architect is handling it, the influence of a machine like a parallel rule permeates into all aspects of the drawing process.

In their design of the “Slow House”, Elisabeth Diller and Ricardo Scofidio employed an architectural drawing with a drawing machine affixed to its surface (fig. 4). This machine is not a typical parallel rule, in fact the machine makes it impossible to produce parallel lines at all. Rather than both ends of the rule travelling at exactly the same rate producing constant parallel movement, one end of the rule was fixed to one specific point while the other end was free to rotate about it. The effect achieved by this was that every line drawn using the machine would radiate around a specific point determined by the machine.

The client who commissioned the Slow House had one request: a house with a view. Taking this as their inspiration, Diller and Scofidio designed a house based around this theme. The house itself acted more as a commentary on how ‘the view’ is valued and experienced in today’s society.

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<sup>19</sup> Hambly, Maya. *Drawing Instruments 1580-1980*. Sotheby’s, London. 1988. p. 113

In their book *Architectural Probes*, D+S state that "Today, the television and the car windshield, in conjunction with the picture window, can be thought of as escape valves in the white noise of vacation space-time."<sup>20</sup> What is implied by this is that we live in a society that constantly bombards the individual with visual information and even while on 'vacation' the individual is still connected to every day life. The only release comes in the form of 'the view', a gaze into infinity. Diller and Scofidio are suggesting that this release is framed in three different ways; the television screen, the car windshield, and the picture window.

Located on a secluded site in the Hampton's, the only way to arrive at the house is by car. This falls into place with the narrative that Diller and Scofidio were trying build within the house. The visual journey starts as a view through the car windshield. A large overhead door pivots to allow the house to accept the car and connect the view framed by the car to one framed by the architecture. The house itself is composed of a long curving form terminating in a 'picture window'. The curve makes it impossible to see the view from the start of the journey and forces the user to move through the house in order to reach the view supplied by the picture window. The house works as "a mechanism of arousal, eliciting an optical desire and feeding it slowly"<sup>21</sup>, hence the name 'Slow House'. In order to address the third realm of visual stimulation, the television screen, Diller and Scofidio designed a tall

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<sup>20</sup> Diller, Elizabeth and Scofidio, Richard. *Flesh: Architectural Probes*. Princeton Architectural Press, 1996 p.224

<sup>21</sup> Op. cit. Diller, Elizabeth and Scofidio, Richard., 1996 p.225

shaft topped with a video camera aimed at the same view achieved by the picture window. The video camera feeds a television screen strategically placed in front of the window. The ability to control, record, and play back the view at any given point further reinforces the idea of capturing the view.

The drawing in question consists of two conventional drawing types; a plan to the left and a series of corresponding sections to the right. The relationship between the two drawing types is mediated by the pivoting arm. What becomes clear after reading the drawing is that not only does the machine correspond directly to the form of the building but it also inspires a new and original drawing technique. Where a parallel rule strongly encourages the use of parallel projection in order to construct an architectural drawing, this new machine produces a type of radial projection. Not only does this radial projection make graphical sense in that it corresponds to the non-orthogonal form discouraged by parallel projection but it also creates an experiential reading of the drawing. Rather than drawing a full longitudinal section of the building revealing both the start and the end of the narrative immediately and simultaneously, the series of cross-sections forces the drawer (and the viewer) to 'slow' down. The slowing down or rather the "arousal" of the drawing is a direct result of the limitations and relationships imposed by the drawing machine. In this sense the machine was not created solely to satisfy the demanding physical parameters imposed by the building form but also to correspond the experiential qualities produced by the

architecture. The experience of travelling from the car to the picture window is both present in the drawing and the architecture.

In a similar manner to the discarding of the custom tool employed by I.M. Pei, the drawing machine used by Diller and Scofidio remains attached to the drawing. The machine is then incorporated into the drawing and can be understood as a piece of the architectural 'facture' as it is essential to understanding the drawing 'in terms of its making'.<sup>22</sup>

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<sup>22</sup>Frascari, Marco. "A reflection on paper and its virtues within the material and invisible *factures* of architecture" *Models and Drawings*. Routledge, 2007. p.23

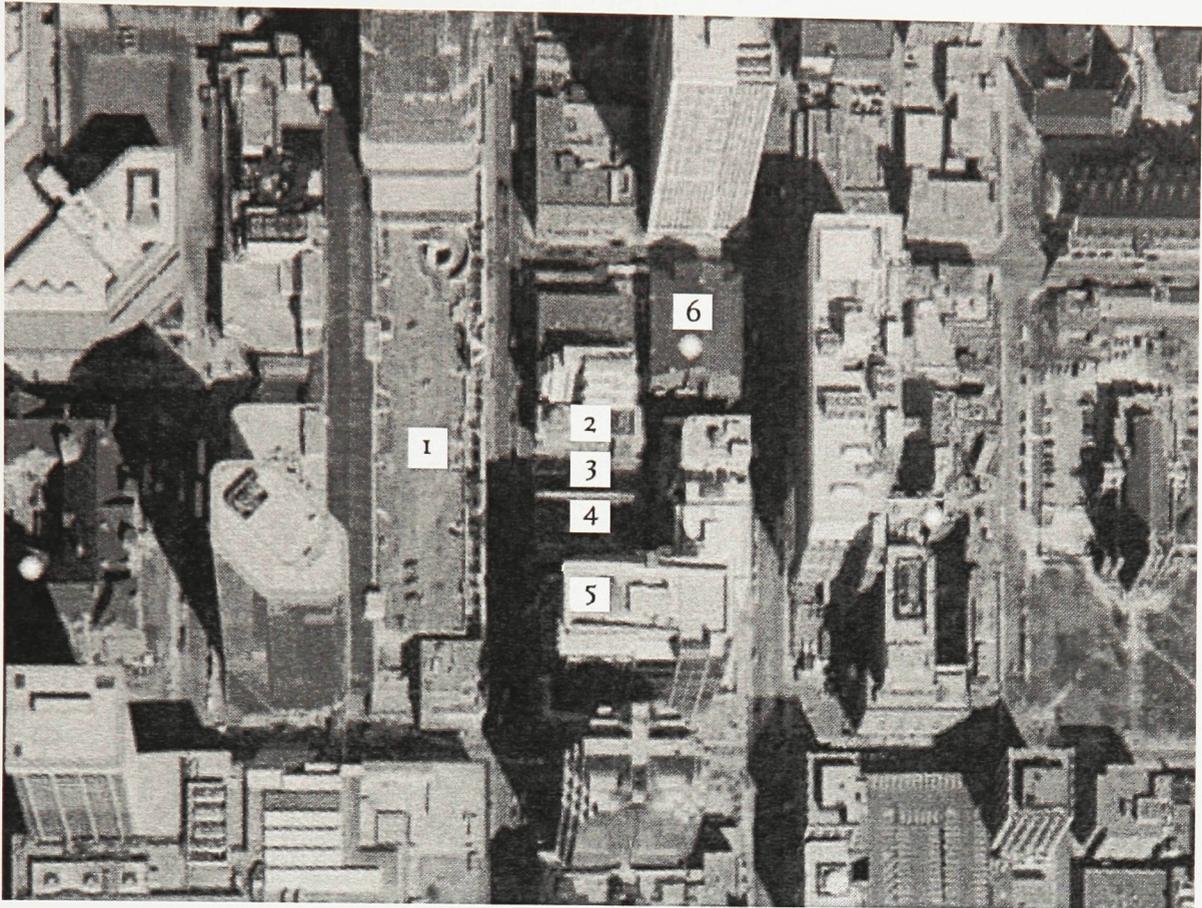


**Figure 5.** 205-197 Yonge Street, Toronto

## Site Description

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The site considered by this proposal provided both a physical and historical context within which to react. The physical architecture of the surrounding buildings has a strong identity and gives a clear account of the manner in which it was drawn/made (fig. 5). The historical evidence of its use, although much less apparent, plays an equally strong role in defining the character of the site. Both the physical and the historical influenced the making of the proposed architecture as well as the making of the tools and instruments used to draw it.

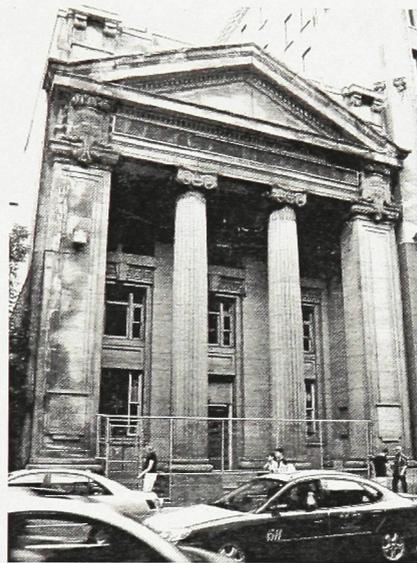


**Figure 6.** Aerial View of Yonge Street.

1. Eaton's Centre
2. 205 Yonge Street
3. Colonial Tavern Park
4. 197 Yonge Street
5. Elgin / Winter Garden Theatres
6. Massey Hall

This particular plot has stood nearly empty for the last 20 years despite its prominent location in the middle of downtown Toronto. The site consists of an urban park with few scattered trees amidst park benches; however, it is the surrounding context which makes the site of interest from an architectural position. Located on the east side of the north-south running Yonge Street, 201-203 Yonge sits humbly on the edge of one of Toronto's main arteries (fig. 6). Directly across the street on the west side of Yonge is the Eaton's Centre,

a shopping mall built in the late 1970s as an expansion to Eaton's department store on the north-west corner of Yonge and Queen Streets<sup>23</sup>. Massey Hall, a historical concert venue built in 1894, is located slightly to the north-east of the site on the same block<sup>24</sup>, while the Elgin/Winter Garden Theatre, built in 1913, sits just south of the site at 189 Yonge Street<sup>25</sup>. This makes for a small entertainment district right in the heart of the city. Both adjacent buildings are neoclassical bank buildings built just over a century ago.



**Figure 7.** 197 Yonge Street

The building located directly to the south of the site at 197 Yonge Street was built in 1905 by Darling Pearson Architects (fig. 7).<sup>26</sup> The neoclassical façade, which boasts perfect symmetry and monumental

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<sup>23</sup> Canadian Institute of Steel Construction, 2008. 13 May 2008.

<http://www.cisc-icca.ca/projects/ontario/Toronto%20Eaton%20Centre>

<sup>24</sup> McGregor, Nancy. "Massey." *The Canadian Encyclopedia*. Historica Foundation, 2008. 16 April 2008. <http://www.thecanadianencyclopedia.com>

<sup>25</sup> Ontario Heritage Trust, 2006. 13 May, 2008

[http://www.heritagefdn.on.ca/userfiles/HTML/nts\\_1\\_7956\\_1.html](http://www.heritagefdn.on.ca/userfiles/HTML/nts_1_7956_1.html)

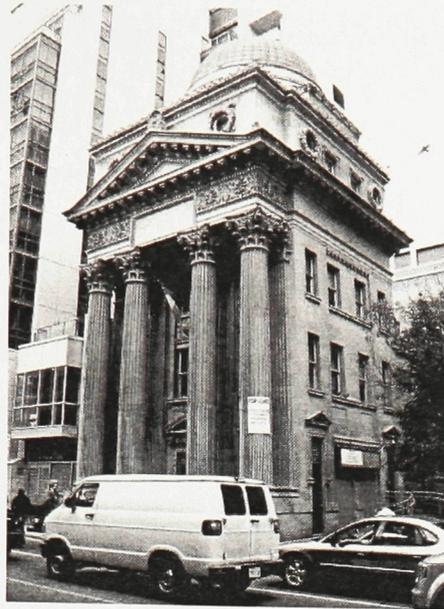
<sup>26</sup> Donegan, Rosemary. *Kawamata: Toronto Project 1989*. Toronto, Mercer Union, 1989. p.35

composition, rises four stories. The building subsequently steps down two stories towards the back. It has, however, since its construction, been dwarfed by its neighbouring thirteen story, mixed-use tower located directly south. It was originally constructed as a branch of the Canadian Bank of Commerce but has since been vacated and remains in this state presently. There are plans to convert it into a retail store but at this point the building remains unused and empty.

The neighbouring building to the north of the site is similar in program to 197 Yonge, however less modest in terms of language (fig. 8). Completed just one year after the Bank of Commerce, the Bank of Toronto building at 205 Yonge Street boasts a more complex massing, including a dome to complete the mini pantheon type structure. E.J. Lennox, the architect of 205, included much more pronounced dentals and the more elaborate Corinthian columns rather than the ionic capitals which top the columns two doors down. The Bank of Toronto building also benefited from a small pedestrian laneway which sliced between 205 and the then existing building at 201-203 allowing for fenestration along the south face of the building.<sup>27</sup> Heritage Toronto had their headquarters in the building for a short time and rented out the main bank lobby as a banquet hall. Currently the building sits empty however still owned by the city.

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<sup>27</sup> Donegan, Rosemary. *Kawamata: Toronto Project 1989*. Toronto, Mercer Union, 1989. p.37

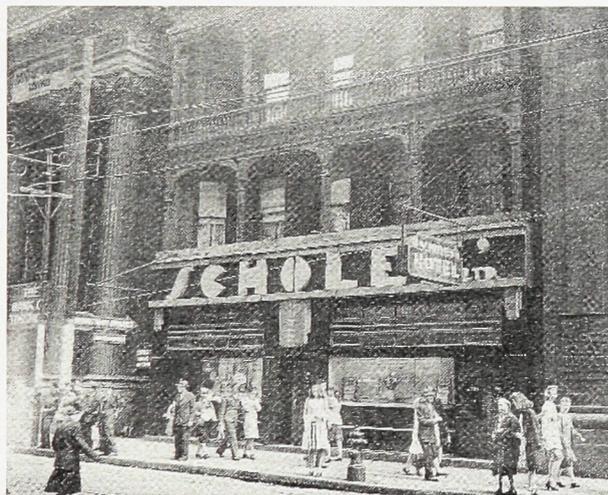


**Figure 8.** 205 Yonge Street

The dense urban language of Yonge Street suggests that the park which currently occupies the site has not always existed as such and that a building once filled the now noticeable gap in the streetscape. The blank north wall of 197 Yonge is an indication of an infill building which once stood either so close that windows would be of no use or rather the buildings shared the wall itself. Other indicators are far more subtle but informative as to what occupied the site. The long narrow shape of the buildings with almost all emphasis placed on the façade is not only characteristic of neo-classical standards but also an indicator that a building existed on the site rather than open park space. One of the more interesting conditions is the way the massing of 205 seems to react to a particular form which is now missing. Halfway down the length of 205 an interior court-type condition is created which allows light into the main lobby but also segregates the upper offices

awkwardly into two distinctive zones. An architectural move such as this seems unlikely if unprovoked.

The building that did stand at 201-203 Yonge Street was built in 1887. Originally built as a mixed-use commercial building, the architect used a variety of ornamental details ranging from the Romanesque-revival turret on the north-west corner to the Victorian galleries which spanned the façade. The third floor was designed specifically as a photography studio and the large row of windows providing northern exposure accommodated this well.<sup>28</sup> It can be assumed that the light quality which was so important to the studio was the reason for the distinctive massing at 205. By carving out the mid section of 205, the northern, indirect light quality required on the third floor of 201-203 would remain unhindered.



**Figure 9.** Schole's Hotel at 201-203 Yonge Street

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<sup>28</sup> Donegan, Rosemary. *Kawamata: Toronto Project 1989*. Toronto, Mercer Union, 1989. p.33-35

Approximately a decade after its construction the ground floor was bought out and converted into a saloon and the establishment was named the Scholes Hotel (fig. 9). The Scholes Hotel operated out of 201-203 Yonge Street for approximately fifty years as a meeting place for sports enthusiasts until it was sold in 1947. Two brothers, Goody and Harvey Lichtenberg opened the jazz club known as the Colonial Tavern soon after.<sup>29</sup> It was this establishment that played a major role in the cultural development of the area.

The Colonial Tavern obtained a cocktail licence soon after it opened and booked jazz acts from across North America. It quickly became Toronto's premiere jazz venue and hosted acts such as Duke Ellington, Miles Davis, Ella Fitzgerald, Oscar Peterson, and Dizzie Gillespie. The Colonial Tavern provided some small apartments on the upper floors for the traveling jazz musicians as it was often difficult for black artists to find a hotel room during this time. Even though a fire destroyed the venue in 1960 the Lichtenberg brothers rebuilt the Colonial Tavern with larger performance spaces than the previous venue. The second floor was used as a dining room and at the ground floor the façade on the street was opened up with large windows.<sup>30</sup>

With the construction of the Eaton's Centre along the west side of Yonge Street in the late 1970's, the eclectic retail stores were replaced with a completely inward-looking shopping mall. This caused the night-life on Yonge

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<sup>29</sup> Donegan, Rosemary. *Kawamata: Toronto Project 1989*. Toronto, Mercer Union, 1989. p.35-37

<sup>30</sup> Op. cit., Donegan, Rosemary, 1989. p.41

Street between Queen and Dundas Streets to slowly diminish and by the end of the 1970's the Lichtenberg brothers sold the tavern. It had several uses after its life as a jazz venue but in 1988 the city tore it down to make way for a small public park which would connect the then refurbished theatres in the area.<sup>31</sup>

During the summer of 1989, the Japanese artist Tadashi Kawamata used the site for a brief period of four months. The park was the site of the building and disassembling of an installation built from recycled lumber from the demolished Colonial Tavern and new lumber (fig. 10). The installation was a sculptural expression of temporality in built form. Taking on a language reminiscent of scaffolding, the artist filled the park with what appeared to be a continuous construction site. The act of building the project was the project itself. The construction finished when all the supplies ran out and the resulting structure remained. What was left was a series of spaces that bled into one another, which the public was free to experience, wander and discover. After a short time of rest the structure began its decomposition as the team of workers slowly dismantled the entire installation leaving no trace that it had ever existed at all.<sup>32</sup>

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<sup>31</sup> Donegan, Rosemary. *Kawamata: Toronto Project 1989*. Toronto, Mercer Union, 1989. p.41-43

<sup>32</sup> op. cit. Donegan, Rosemary, 1989. p.47



**Figure 10.** "Toronto Project", Tadashi Kawamata

Pedestrian traffic in the area has recently increased with Toronto's attempt to revitalize the corner of Yonge and Dundas Streets- a short distance from the proposed site. This corner is intended to act as a 'Times Square' of Toronto. The west façade of the Eaton's Centre has added retail which faces the street and the theatres on the block have been restored and are currently a hub for Broadway-style musicals as well as a venue for the Toronto Film Festival.<sup>33</sup> The nightlife has returned to Yonge Street and the increased retail has augmented the pedestrian traffic. The conditions under which a successful live music venue site could thrive exist once again on the site between 197-205 Yonge Street.

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<sup>33</sup> Ontario Heritage Trust, 2006. 13 May, 2008  
[http://www.heritagefdn.on.ca/userfiles/HTML/nts\\_1\\_7956\\_1.html](http://www.heritagefdn.on.ca/userfiles/HTML/nts_1_7956_1.html)

Describing the spirit of the Colonial Tavern author Rosemary Donegan states that "...it is the small incidents – a fabulous set, a great improvisation – that are the memories of the Colonial most treasured by Jazz enthusiasts."<sup>34</sup> It is the essence of these unique performances, the inimitable moments which arise during the playing of live music which are embodied in the proposed architecture of the re-interpreted Colonial Tavern. The program is treated much like a piece of music which is able to be performed and interpreted in many different ways. The new architecture takes the original spaces such as the main performance space, the bar, the lounge, etc., and inserts them into an environment which allows them the freedom to be re-interpreted by the users of the building with every performance.

In order to achieve this condition the architecture is considered as an experience of the 'audience' or the user in time as opposed to a concrete object in space. In Simon Shaw-Miller's *Thinking Through Construction: Notation-Composition-Event* he states that:

"Musical works are not works in the same sense as an object. Rather, a musical work is a dialogue between notation, performer and audience. In short, musical works are events."<sup>35</sup>

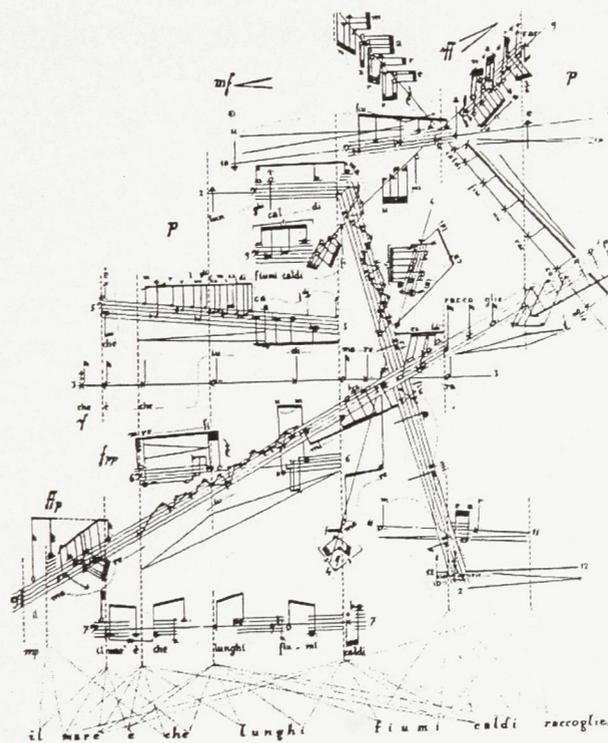
This 'dialogue between notation, performer and audience' or rather between drawing, building and user, is one that varies one performance to the next.

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<sup>34</sup> Donegan, Rosemary. *Kawamata: Toronto Project 1989*. Toronto, Mercer Union 1989 p.41

<sup>35</sup> Shaw-Miller, Simon. "Thinking Through Construction: Notation-Composition-Event". *AA Files 53*, London, 2005. p.45-46

With reference to a musical work the uniqueness of a performance is not only due to the variant audience but also the variance provided by the performer. The latter variance is what made the Colonial Tavern such a 'memorable' place. When this same condition is considered architecturally, the drawing remains constant, the user varies, and the building, typically, remains the same at every performance. By providing the architecture with the ability to fluctuate in order to accommodate or even promote the uniqueness of every performance, the proposed building acts as a performer providing a unique experience rather than a static object completely reliant on the user.



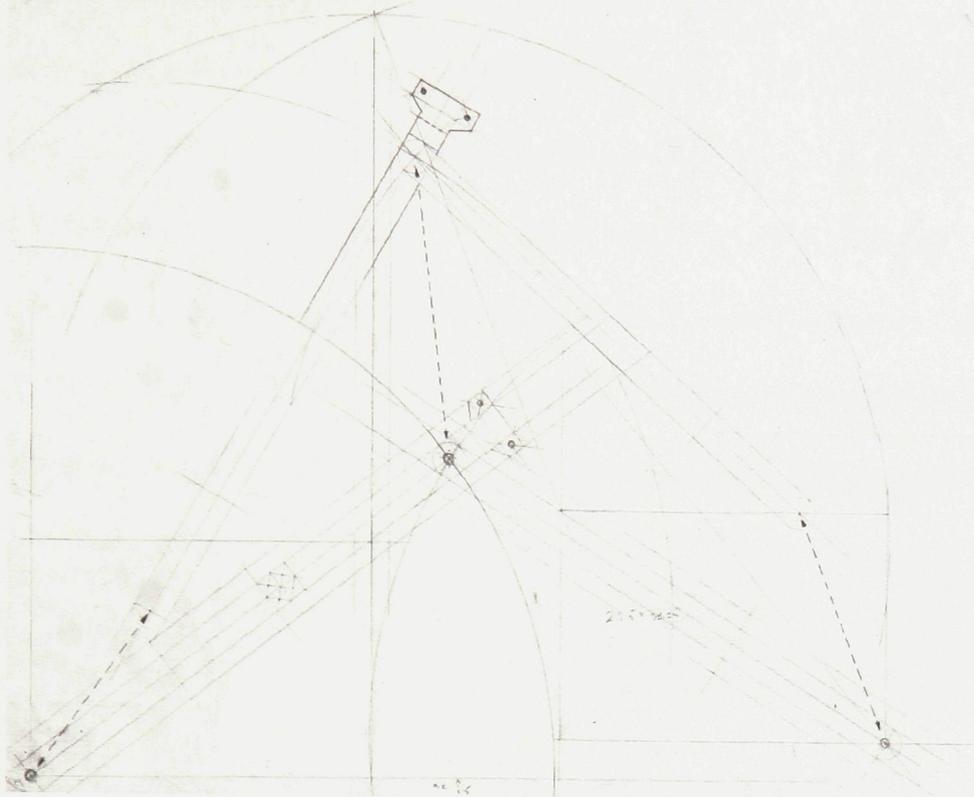
**Figure 11** Sylvano Bussotti, Five Piano Pieces for David Tudor - No.1

The relationship between the interpretations of musical notation and the interpretations of architectural drawing can be further understood by

examining Sylvano Bussotti's *Five Piano Pieces for David Tudor* (fig. 11). In this example Bussotti, a composer, creates his own form of musical notation in which the performer plays a much more active role in the interpretation of the musical piece. Bussotti does not dictate the musical output of the performance with his notation but instead "establishes only certain general situations and then allows the performer great liberty in fulfilling them."<sup>36</sup> In the same way, the drawings for the proposed building comprise the potential for multiple variations and interpretations capable of being performed by the building. The evidence of these potential performances remains ever-present in both Bussotti's notation as well as in the architectural drawings and subsequently, the proposed architecture itself.

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<sup>36</sup> "Sylvano Bussotti". UXL Encyclopedia of World Biography. (2003). FindArticles.com. 13 May. 2008. [http://findarticles.com/p/articles/mi\\_gx5229/is\\_2003/ai\\_n19145316](http://findarticles.com/p/articles/mi_gx5229/is_2003/ai_n19145316)



**Figure 12.** Design Drawing for Modified Pantograph

## Drawing and Performance

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The making of drawings which embody several variations requires the use of a drawing technique and a set of tools and instruments designed with the purpose of achieving that goal.

In the case of the Berlin Philharmonie, Hans Scharoun encountered great difficulty in representing his architecture using a convention inappropriate to the form and intentions behind the building. While the building was designed using models and sketches, the complex geometry of the canted and curved surfaces of the Philharmonie were inadequately

represented in the conventional plans and sections required by the builders. In an attempt at a more accurate depiction of the form of the building, the architects supplemented the conventional drawings with a series of thin sectional drawings taken at close intervals across the entire building. These sectional drawings did not produce the experiential quality typically captured in a sectional drawing, however they did aid in a more accurate survey of the architecture that was to be built.<sup>37</sup> Robin Evans reacts to this example:

“To the extent that modern architecture relinquished the underlying order of frontality, symmetry, planarity, rectangularity, and axially, it was no longer in easy accord with its drawing techniques. Buildings, though not wholly determined by the means of their production (which is to say, from the architect’s point of view, their representation), are mightily influenced by them. Demands on the architect’s imagination are far greater when the object has to be envisaged despite its drawing ...”<sup>38</sup>

The tools and instruments used to envisage the architecture of the new Colonial Tavern are embedded with properties that ‘mightily influence’ the production of the drawings in a direction prescribed by the architect rather than a typical convention. In this way the production of the architecture relies on the way it is drawn rather ‘despite’ it.

In order to embed the process of drawing with the qualities found in a musical performance a combination of tools, instruments and machines which hybridize the performance of music with the performance of drawing is used. Simon Shaw-Miller, in his book *The Visible Deeds of Music*, discusses the nature of hybrid art forms with reference to Jerrold Levinson by first categorizing the conjoining of ‘so-called’ pure art forms into three different

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<sup>37</sup> Evans, Robin. *The Projective Cast: Architecture and Its Three Geometries*. MIT Press, 1995. p.120

<sup>38</sup> op. cit. Evans, Robin. 1995. p.121

methods; juxtaposition, synthesis, and transformation. In the juxtapositional method, the hybrid allows both art forms to maintain their separate identities in the company of each other. The synthesis, alternatively, mixes the two components and brings them into a third realm where neither original piece maintains its complete original characteristics.<sup>39</sup> The third hybrid, the transformation, is where the tools, instruments and machines used to design the new Colonial Tavern reside. Shaw-Miller distinguishes the transformational hybrid from the other types:

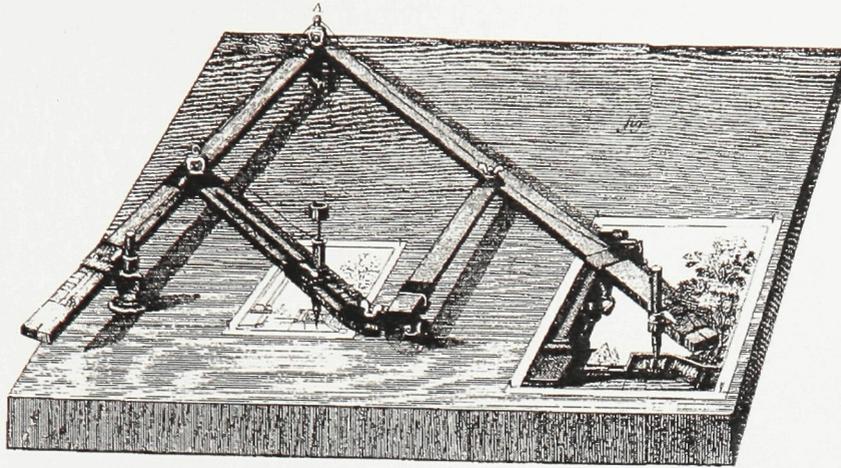
“The relationship is always ... one of dominant and subordinate, in any combination. If in a juxtapositional hybrid, the art forms share a temporal and spatial location but remain in other ways distinct, and if in a synthetic hybrid each art form moves to a middle ground somewhere in between their respective individual positions, then in a transformational hybrid, one art form crosses over into the territory of the other(s)”<sup>40</sup>

In the case of the drawing equipment used in the production of the new architecture, the ‘dominant’ role is played by the act of drawing whereas the ‘subordinate’ role is played by musical performance. In this way the properties sought after in a musical performance are brought into the realm of architectural making through the drawing. The ‘transformational’ properties of the hybridization result in the graphic evidence of musical performance presented in a form able to be utilized in the production of architecture.

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<sup>39</sup> Shaw-Miller, Simon. *Visible Deeds of Music: Art and Music from Wagner to Cage*. Yale University Press, 2002. p.11

<sup>40</sup> op. cit. Shaw-Miller, Simon. 2002. p.17

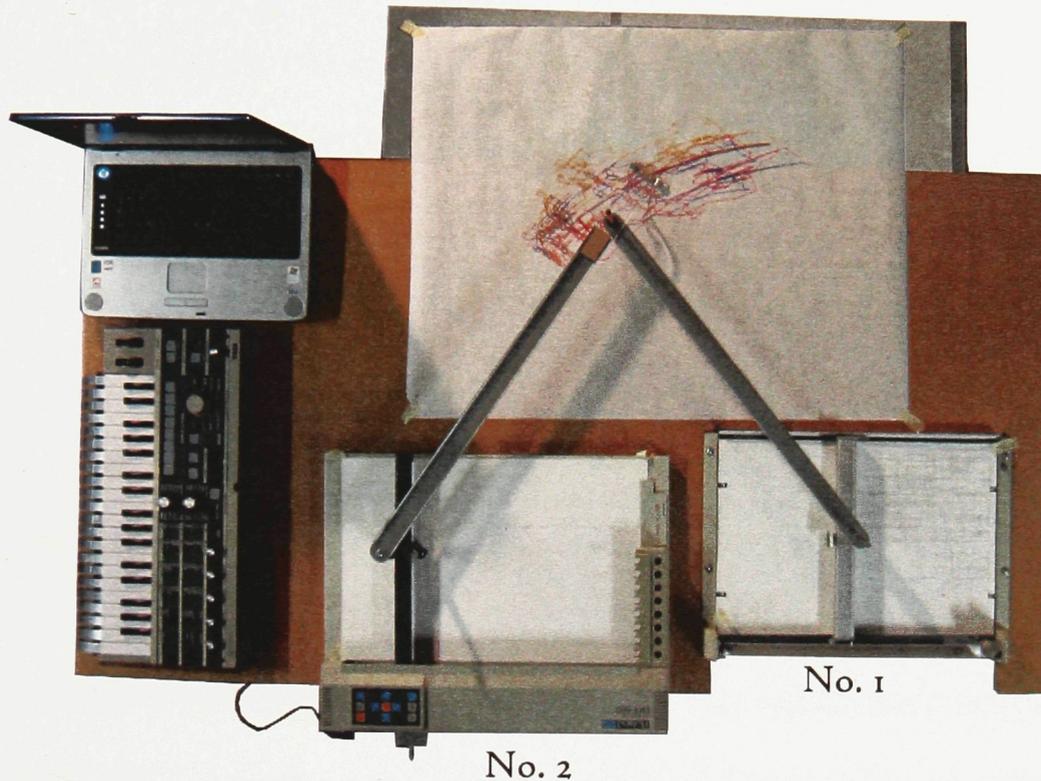


**Figure 13** Pantograph, illustrated in use. circa 1763

The pantograph is a drawing machine invented for the purpose of enlarging or reducing existing drawings (fig. 13). The machine was first conceived of at the beginning of the seventeenth century, but was most popular in the early nineteenth century with land-surveyors and railway engineers as an aid in producing accurate reductions of maps.<sup>41</sup> The pantograph, through its 'inherent limits', or in this case its geometric construction, imposes a specific relationship between two drawing points. As one point moves the other will move relative to it but with its motions either scaled up or down. The drawing equipment used in the production of the architecture for the new Colonial Tavern is geometrically similar to a pantograph (fig. 12). The difference being that instead of translating one drawing to another, the modified pantograph is transforming one medium to another by way of hybridization through the use of additional instruments and tools.

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<sup>41</sup> Hambly, Maya. *Drawing Instruments 1580-1980*. Sotheby's, London. 1988. p. 130-132



**Figure 14.** Modified Pantograph with Supporting Machines and Instruments

The modified pantograph (fig. 14) also differs from the conventional model with reference to the input. In a conventional pantograph there is only one participatory action, tracing or drawing, which is translated, where in the modified version there are two: drawing and performing musically. Both of these actions are, however, mediated by instruments before being subjected to the limits imposed by the machine.

### -Musical Instrument-

The musical instrument, a keyboard synthesizer, interfaces with the user through the piano keys. The keys correspond to a predetermined set of actions provided by the instrument and it is only by complying with these actions that the user may interface with the instrument. The actions used to interface with the keyboard will result in corresponding sounds. Through the reception and reaction to (through succeeding actions) the sounds emitted from the musical instrument the user is able to perform musically.

### -Machine No.1-

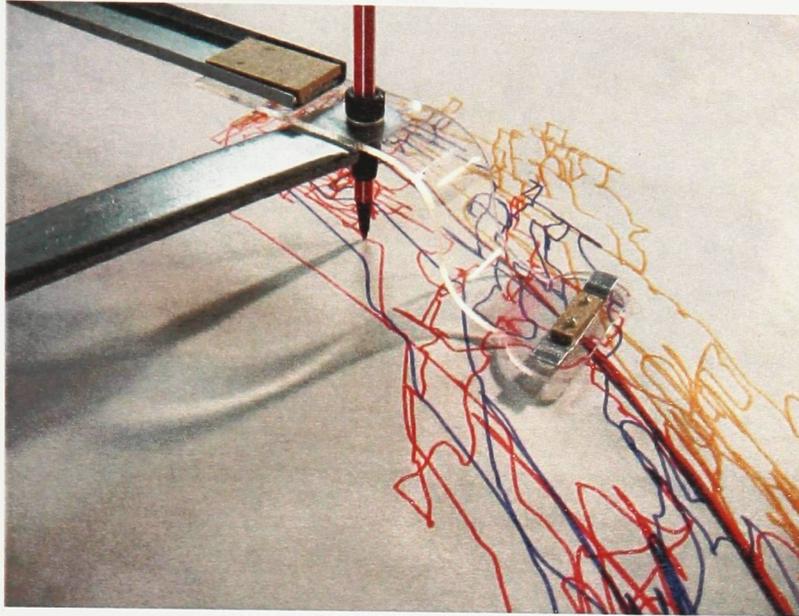
The first drawing machine, a modified pen plotter, interfaces with the user through the musical instrument. The limits imposed by this machine are derived from its inherent properties; the motion of a point in four directions (X +/- and Y +/-) above the plotting surface. These limits are imposed on the musical instrument by means of a series of switches connected to the keys of the keyboard. The pressing of a key results in the motion of the point in one of the four directions. The limits imposed by the machine do not, however, affect the musical output of the instrument. This allows for the instrument to be played uninfluenced by the machine. The machine benefits from the physical movements of the keys which are also a result of the musical performance.

### -Computer-

The second instrument, a computer, interfaces with the user through a 'drawing' program, a keyboard and a mouse. The notational system imposed by the computer is based in the actions required by the program to produce a digital drawing. Where the musical instrument produced sound as well as the motion of the keys, the computer produces an electronic signal. By means of the keyboard and mouse, the user produces digital representations of drawings of the existing building (205 Yonge Street) adjacent to the Colonial Tavern site. These representations act as a reference to which the hybridized drawing can be related. The electronic signal produced by the computer is its interpretation of the digital representations created by the user.

### -Machine No.2-

The second machine, also a pen plotter, interfaces with the user through the computer. The limits of this machine, similar to the first machine, consist of the motion of a point above the plotting surface. This machine imposes its limits in much the same way as the first machine, however, in this case rather than interpreting the motion produced by the piano keys, this machine imposes its inherent order on the electronic signal. The limits imposed by the machine translate the signal into a series of motions carried out by a point.



**Figure 15.** Pen / Pantograph

-Modified Pantograph-

The third machine is the pantograph-like armature which interfaces with the user through the other machines and instruments. The modified pantograph is able to combine the musical performance with the digital drawing of the existing architecture. Both have been performed using specific instruments and machines which result in a similar product; the motion of a point in the X and Y directions above a plotting surface. Due to this condition the pantograph is able to combine both motions into one resulting motion.

-Tools-

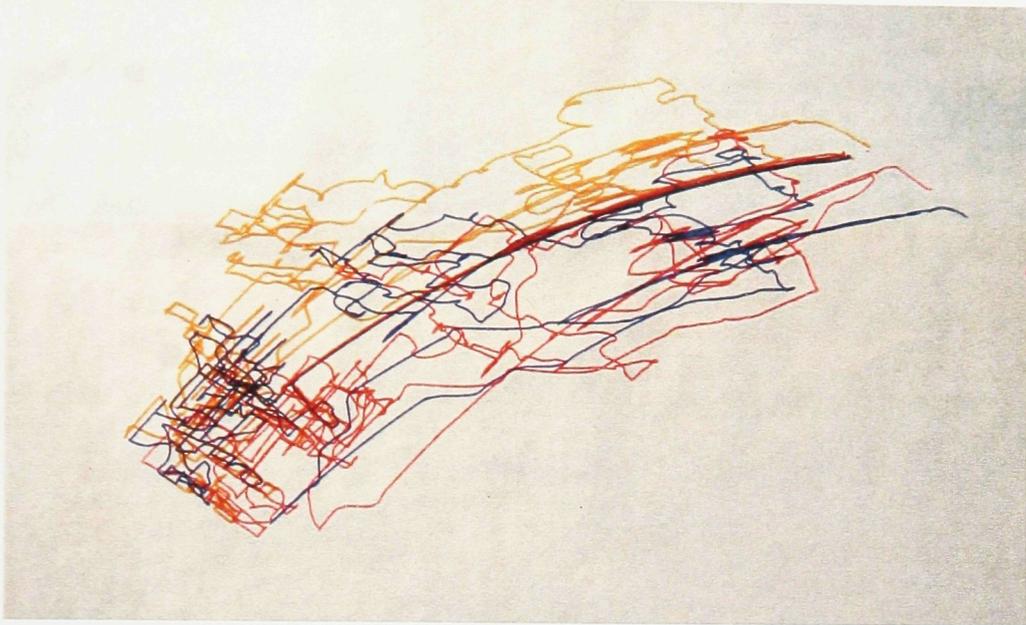
The pen is the tool which produces the final reaction with the paper. The direct relationship between the modified pantograph and the tool allows for the translation of the movement of the machine to a drawing.

The modified pantograph, which has the ability to hybridize the drawing of architecture with the performance of music, also has the capability to demonstrate the uniqueness of such a performance. While the computer paired with the second drawing machine will always produce the same motion, the movement of the keys on the musical instrument, however, will be unique to each performance. Even slight variations between the interpretations of a given piece of music are easily recognizable once depicted as a layered drawing. By varying the color of the pen with every performance, a trace of every iteration remains present as subsequent performances take place. (fig. 15, 16)

The modified pantograph produces a drawing which is, in effect, the essence of the architecture of the new Colonial Tavern. A *second* act of drawing is developed as a parallel method of creating the architectural factures necessary in the production of the new proposal.

The proposed architecture for the Colonial Tavern site also inhabits the neo-classical bank building which stands directly adjacent. To account for this condition the existing architecture is present in both the use of the modified pantograph as well the basis of this second act of drawing. The drawings produced by the first act of drawing are architectural factures given that material reactions are present and they are 'a record of their own having-

been-made'. The difference between the two acts of drawing is that the first is revealing musical iterations where the iterations revealed by the second act are architectural.



**Figure 16.** 'Variations'

The second act of drawing is a customized version of parallel projection. The technique of using plan, section, and elevation was developed in conjunction with the architecture it was describing. Robin Evans describes how 'frontal, symmetrical, axial, and predominantly orthogonal' classical architecture was in nearly perfect accord with how it was being drawn. By using a ground plan, a front elevation, and an axial section the Classical designs would inevitably entail a central, axial processional route and a symmetrical elevation.<sup>42</sup> These were very similar conditions to those under which the original bank was designed. Therefore the most appropriate way in

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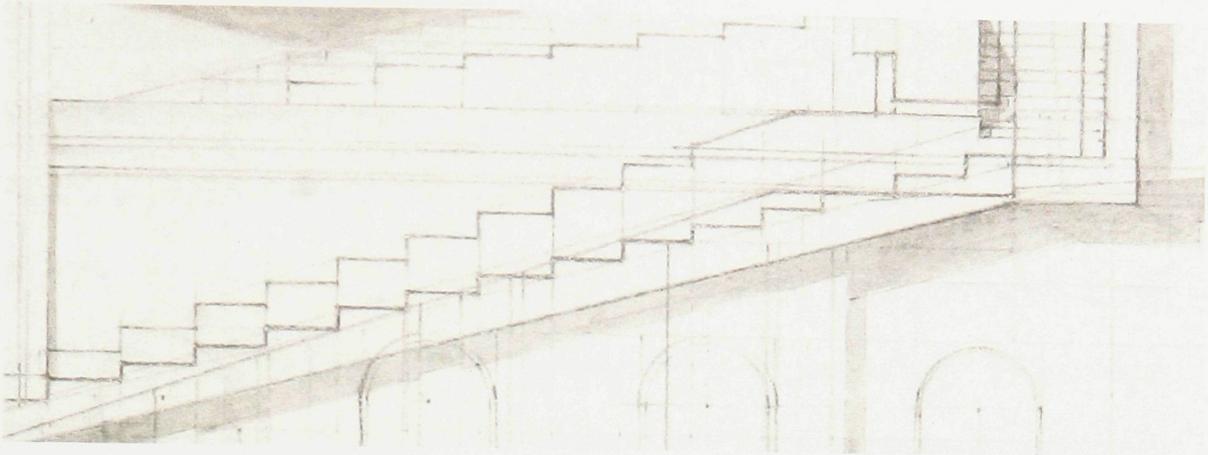
<sup>42</sup> Evans, Robin. *The Projective Cast: Architecture and Its Three Geometries*. MIT Press, 1995. p.119

which to represent this building is through the use of parallel projection and plan, section, and elevation.

While the existing architecture is drawn in a conventional manner due to its classical nature, the intervention imposed by the new colonial tavern is drawn in a way that coincides with the modified pantograph. Where the first act of drawing uses multiple iterations of a musical performance, the second uses multiple iterations of a drawing performance (fig. 17). The plans, sections and elevations of the bank set up a context in which to perform and react. In an essay discussing the relationship between architectural drawing and performance, Peter Wood states: "That drawing has a performative component is self-evident. Drawing is firstly an action. Only after the action does it become a thing."<sup>43</sup> In the same sense that the traces of musical performance are layered in the first act, so too are the traces of the performances of drawing in the second. These drawings are read not solely as drawings which exist in space but also as performances which existed in time. In this way the drawings produced by the modified pantograph and the second act of drawing achieve the same goal.

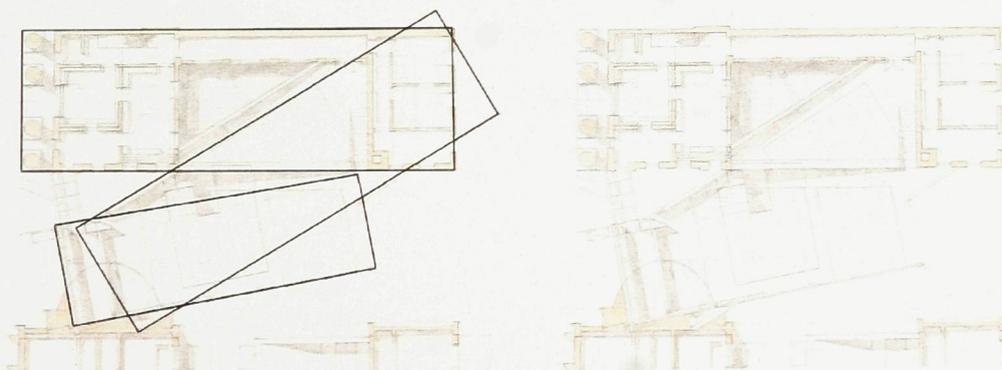
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<sup>43</sup> Wood, Peter. "A Woman Asks her Psychiatrist" School of Architecture, Victoria University of Wellington, New Zealand. November, 2007.  
<<http://www.lboro.ac.uk/departments/ac/tracey/perf/images/wood.pdf>> p.3-4



**Figure 17.** 'Variations'

It is the proposed architecture itself (fig. 19, 21, 22, 23), however, that accomplishes the ultimate goal of promoting the uniqueness of every performance- it acts as the performer itself. This is achieved by, like the Bussotti piece, 'establishing only certain situations' in which the architecture can fluctuate and be reinterpreted by the user. The diagram below (fig. 18) shows the use of the existing building's geometry as a source for the variations in the architecture itself- not unlike the drawings demonstrated by the modified pantograph. Each new variation comprises a different programmatic element, and consequently a new way in which the building can perform.

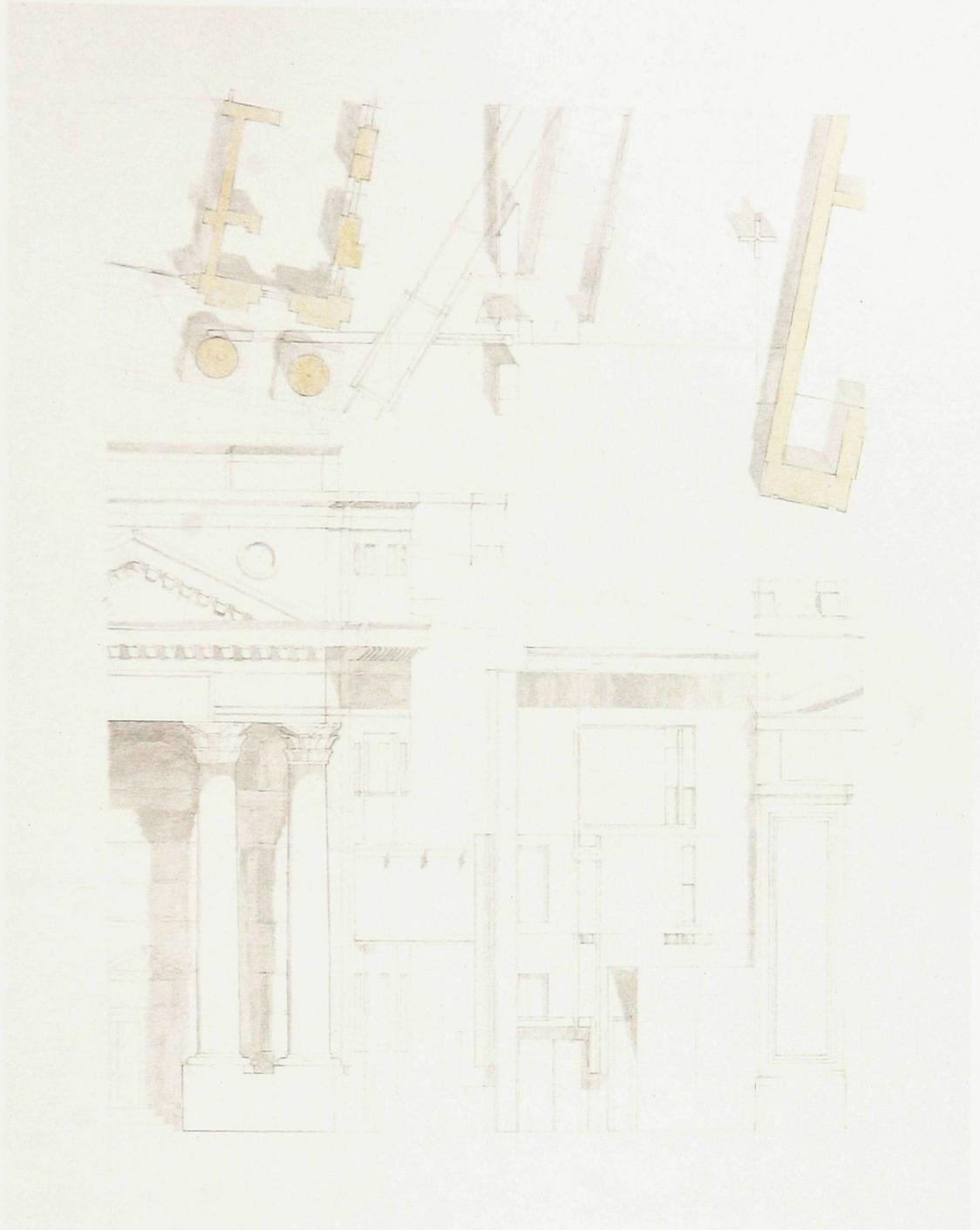


**Figure 18.** Variations in Plan, Third Floor / Main Performance Space

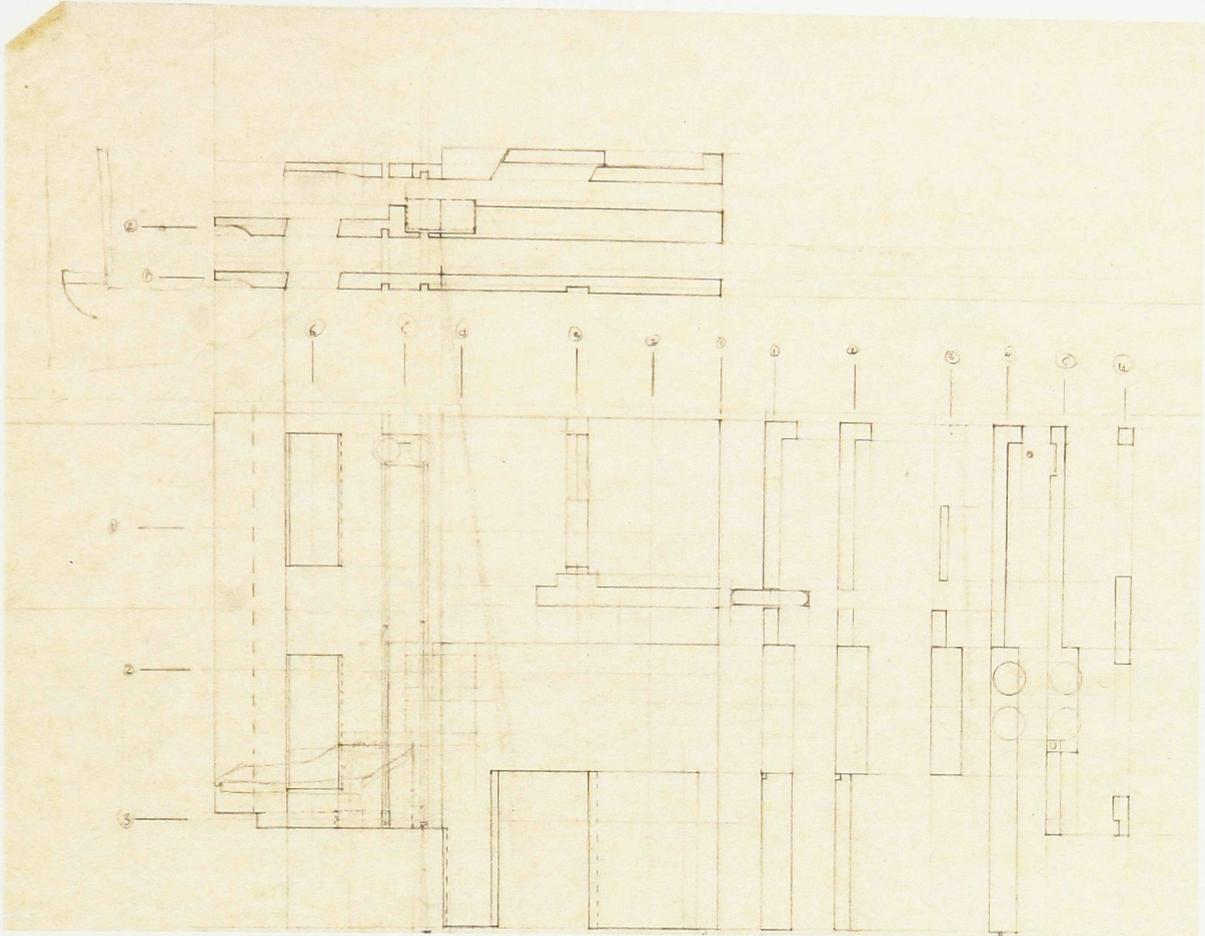
The fluctuation between the varying 'performances' of the building, or interpretations of the space, is mediated by a sliding façade panel (fig. 19). Similar to how the modified pantograph drawings show the potential of multiple interpretations within a piece of music, the building itself achieves the same goal architecturally through the design of the façade panel. When using the modified pantograph, each subsequent performance was recorded on the same sheet of paper. The super-imposed drawings allowed for the immediate recognition of variance between each performance. The façade of the new Colonial Tavern takes this condition as a precedent. The majority of the façade is made up of a moveable panel which has the capability to slide and pivot depending on what is taking place inside the building. This piece acts as the 'tell-the-tale detail'<sup>44</sup> of the project by revealing the potential variations the architecture can comprise. By revealing openings and closing off access, the façade of the building dictates how the building is used and therefore interpreted. Additionally, even when in a specific position the traces of the other interpretations are still visible. Whether it is handles, tracks, joints, folds, or hinges, these traces reveal the potential and presence of other interpretations imbedded in the building. The façade is telling of how the architecture is not constant but constantly fluctuating and performing in different ways.

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<sup>44</sup> Frascari, Marco. "The Tell-the-Tale Detail", *Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory 1965-1995*. Princeton Architectural Press, 1996

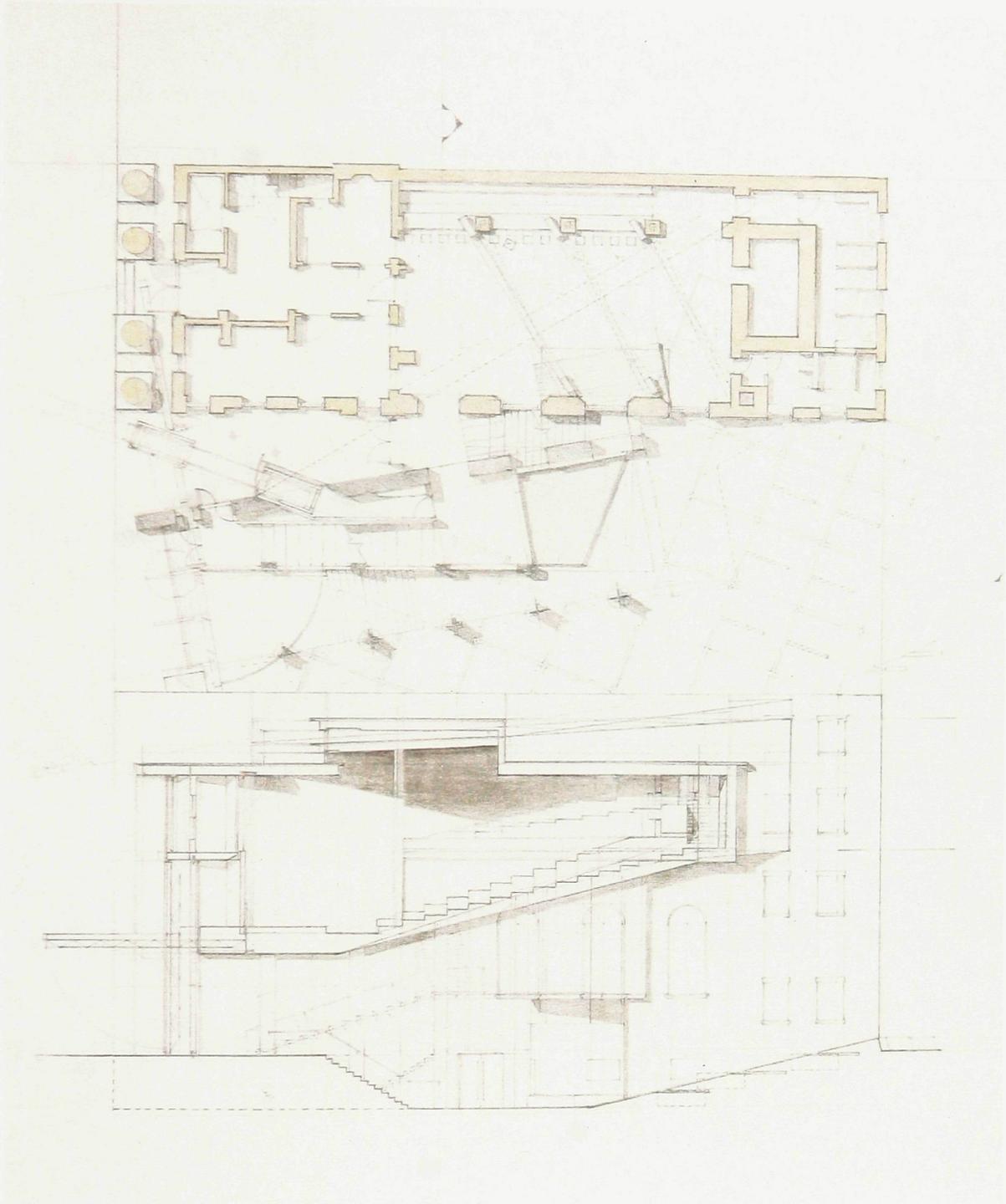


**Figure 19.** Plan / Elevation of Façade Panel

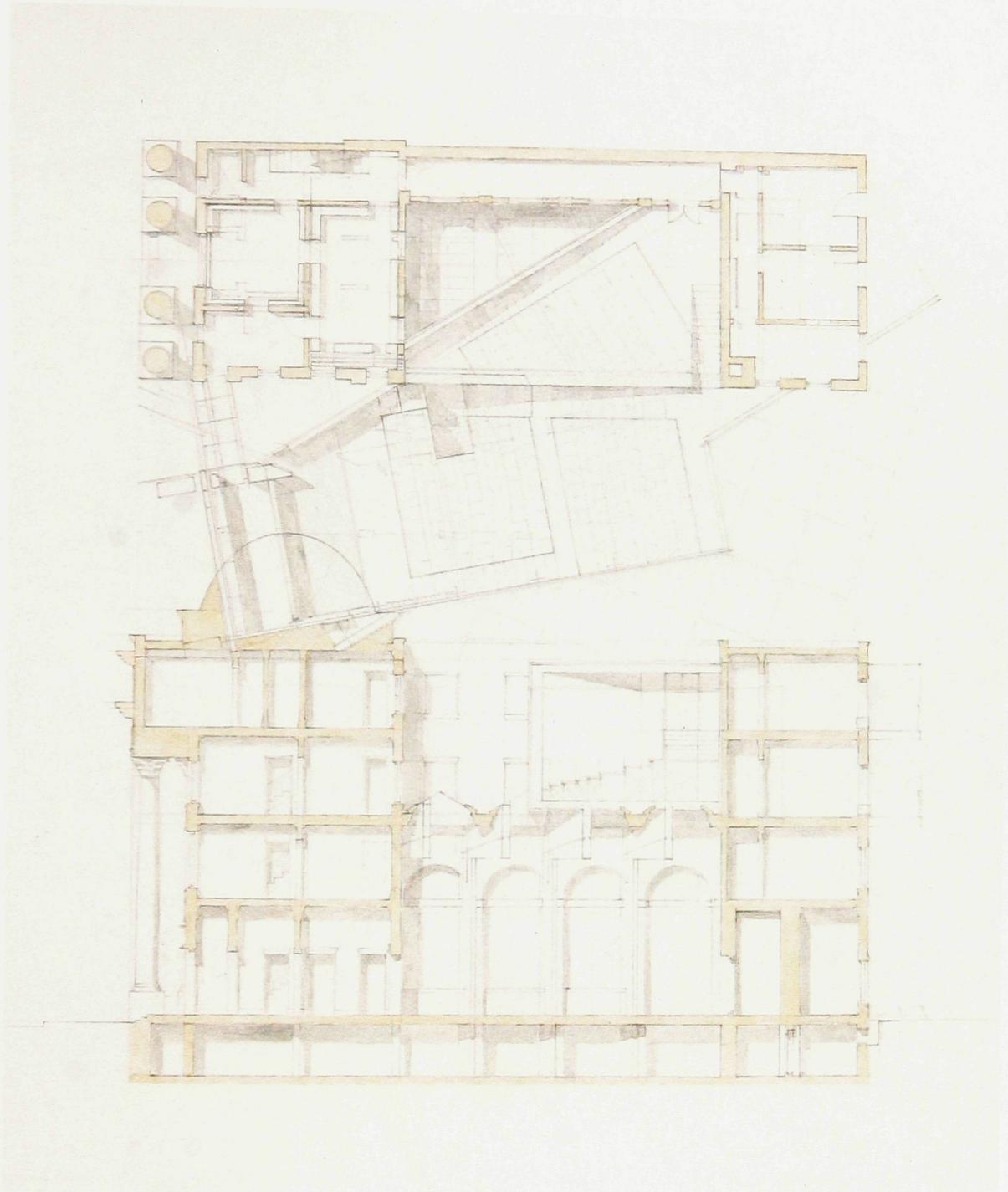


**Figure 20.** Development Drawing of Façade Panel

The drawing of this panel is carried out using a similar technique to how the panel actually functions. By making use of the materiality of the paper it is drawn on, the vellum drawing (fig. 20) is superimposed over the elevation in the various positions into which the panel is shifted. The tracings of each position are combined to produce the architecture of the panel. The ability to function responsively in each of these positions is achieved through the hinges, folds and seams which, when not in use, speak of the presence of other positions.



**Figure 21.** Ground Floor Plan / Axial Section of Performance Space



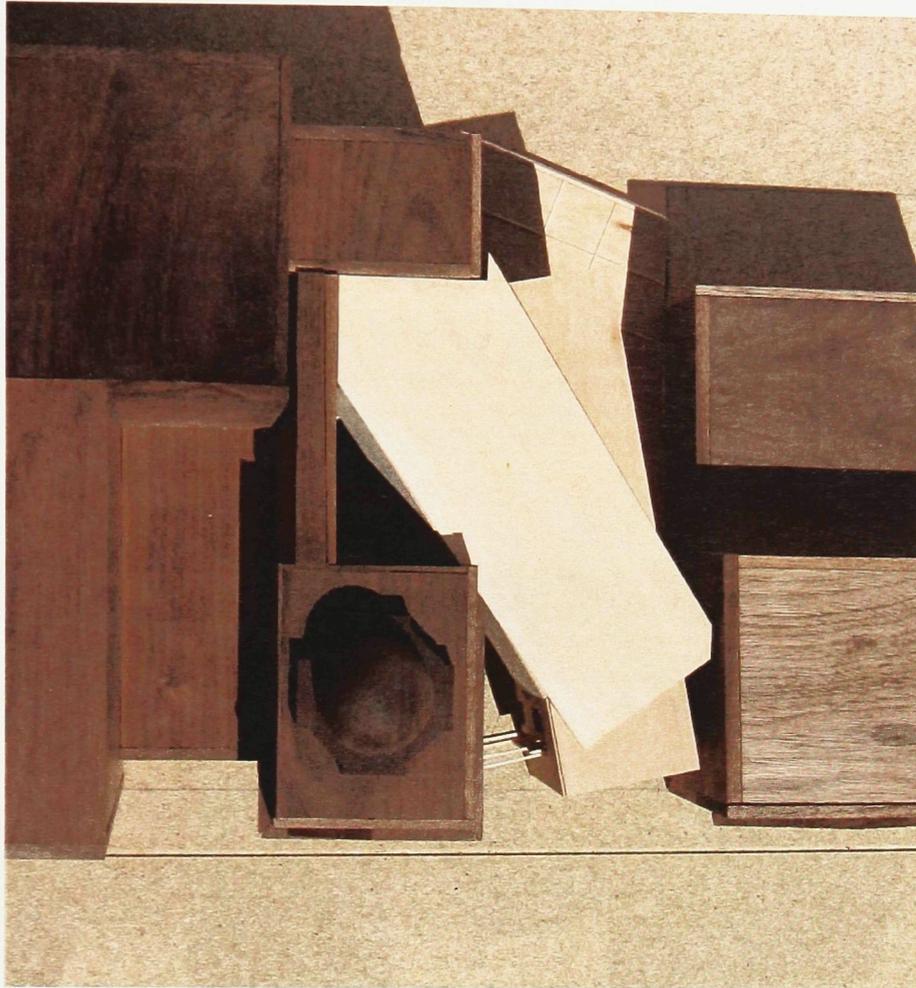
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**Figure 1.** Third Floor Plan / Axial Section of Existing



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**Figure 23.** Elevation / Cross Section



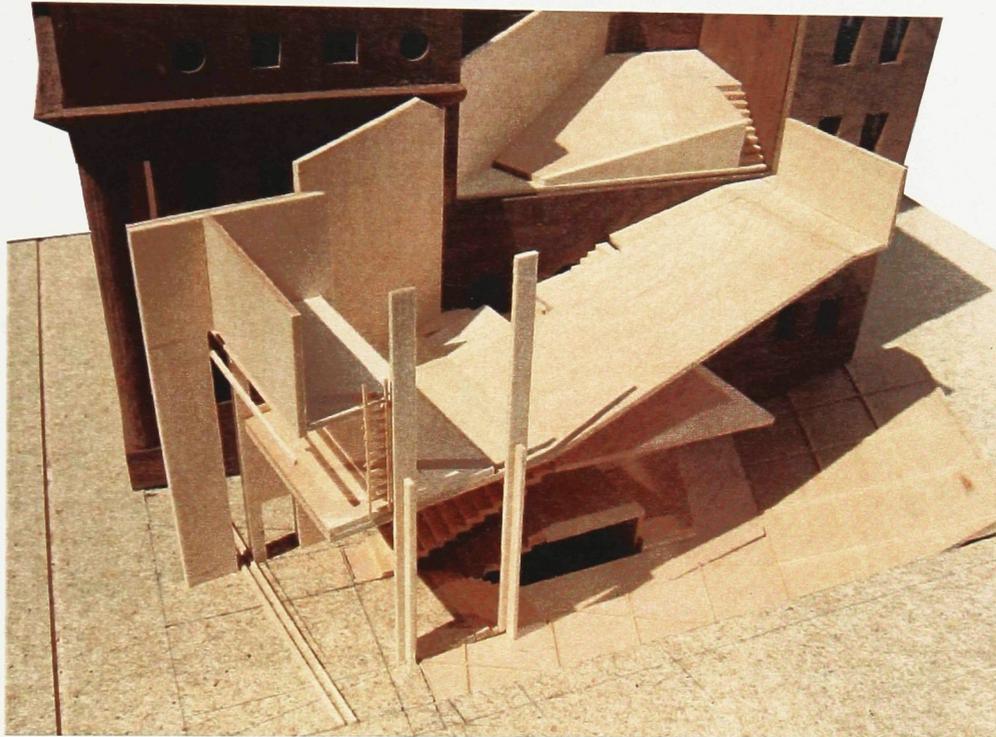
**Figure 24.** Aerial View

### An Architecture of Variation

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The new program is a re-interpretation of the program of the old Colonial Tavern. The existing building at 205 Yonge St. which is currently empty serves as the host to this new institution, grounding the new architecture as well accommodating a large portion of its program (fig 24). A larger two-hundred seat performance space is the main focus of the new program and the most prominent mass of new architecture (fig. 25). The new

program also includes several alternate performance venues as well as lobby space, recording space, administrative space, temporary apartment space for artists, and archives, all while maintaining a significant amount of outdoor space at the ground level (fig. 26).



**Figure 25. Main Performance Space**

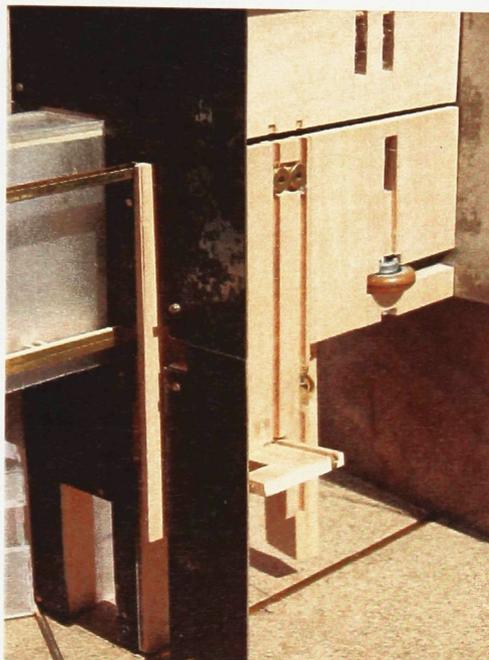
The building itself can be understood as a series of variations of an original. This is most easily visible in the plan of the building (fig. 21, 22). In this case the structure of the existing building acts as the original and the intersecting geometries of the new structure act as the variations. The geometry of the new performance space is offset from the existing geometry by a slight angle creating a distinction between the two. The mezzanine/balcony level adds another variation on the use of the main performance space and is therefore offset slightly from the geometry of that



**Figure 26.** Outdoor Performance Space

space. The slight shift in the orientation of the structural grids as well as materiality allows for the user to differentiate between the old and the new as well as between programmatic functions. Despite the difference in orientation, the interval of structural members as well as the rectangular form of the original remain similar within each new iteration. This provides a sense of identity within each individual iteration while maintaining a common language. This idea is first encountered by the user as they enter the building on the ground floor (fig. 27, 28). The main entry is located eleven meters in from the street at the end of a fissure between the existing building and the new architecture. The long, narrowing promenade makes it obvious that the two languages are on two different orientations. This condition is reinforced after

the user enters the building and is faced with a stair leading up to the main performance space. The stair mediates between the neo-classical arched windows of the existing south façade to the left and a series of concrete columns spaced at equivalent intervals to the right. In this way the user is aware of the differing geometries and is able to move freely in and about them.



**Figure 27.** Entrance Detail

In addition to the shifting access, the main spaces within the building are also designed with the capability to shift uses. The new main lobby reinterprets the existing bank lobby as both a crush space for the theatre above but also as a potential performance space on its own. Again, sliding panels aid in the transformation by means of controlling the light conditions as well as adding acoustic properties to the space making it more suitable for performance. Throughout the entire complex the potential for impromptu

performances has been accounted for. The bridge which connects the second floor of the existing building to the backstage acts as a gate way to the complex but also has the capability to open onto the small courtyard between the buildings. With the façade panel in the position which closes off the space, a performer located on the bridge could benefit from the unique acoustic qualities of the confined space.

The main performance space has a capacity of two-hundred people but also the ability to section off a mezzanine level- reducing the crowd size to a more intimate number. The mezzanine level hovers in the void above the lobby which was once allotted in order to provide light for the adjacent photography studio. When closed off the mezzanine acquires a new function. The panels which slide shut to enclose the space have been designed in a way that perforations allow for the transmission of sound while still providing a visual barrier. The mezzanine space behind the barrier can then be used as a more informal gathering space while still having audible access to the performance taking place in the adjacent space. While in this form the mezzanine level would mainly be accessible to those who inhabit the original section of the building and be used as a lounge space for the resident artists and staff.

The most static spaces in the complex are those which inhabit the original office space of the bank building. The temporary apartments occupy

the upper three floor of the rear portion. Each has newly added outdoor space accessed through apertures which inhabit existing windows. The office space in the front portion is occupied by recording studios on the upper two floors, administration offices for the complex on the second floor and support spaces such as public washrooms and coat check on the ground floor. The bank vault on the ground floor is reinterpreted as a bar and the vault in the basement is used to store archives.



**Figure 28.** Façade

## Conclusions

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I argue in this text and through the architectural project that rather than yielding to the most conventional choice of architectural representation, often presented synonymously as the most economical, the choice of tools, instruments and drawing methods should be considered in accordance with the nature of the architecture being proposed.

The 'material reactions' that make up the architectural facture are mediated by tools and instruments that influence the act of drawing. These pieces of drawing equipment in combination with a drawing technique have a strong impact on the outcome of the design process. When an architect selects or develops tools and/or instruments which are sympathetic to the intention behind the proposed architecture, the architect can rely on the drawing process rather than create architecture despite it.

The proposed architecture for the Colonial Tavern site in Toronto is developed through the use of drawing equipment and techniques which are based on the history of the site itself. As the site has historically been a place of performance, the drawing methods, tools and instruments are approached as performative elements. By hybridizing musical performance with drawing, the tools and instruments make factures influenced by the properties of musical performance.

The modified pantograph is used to 'make tangible' the graphically 'intangible' nature of musical performance. This device aids the user in producing representations of individual musical performances – presented not as architecture in the traditional sense, but as a facture within the 'tangible' reach of architectural representation. However, by not producing architectural drawings, but rather a tangential form of drawing, the process used in the design of the new Colonial Tavern deviates from that of the precedents set by both I.M. Pei and Diller + Scofidio. By re-evaluating the relationships between drawing and architecture in the cases of the National Gallery and the Slow House the locations of the specific acts of drawing can be better understood.

The National Gallery, although drawn using customized set squares, was still developed using parallel projection in plan and section (fig. 2, 3). The use of the customized set square was the specific act of drawing, however, the set square was not the only influence present during the design of the building. It acted not as the sole generator of the design but rather as one part of many which, as a whole, were used to draw the plans and sections of the National Gallery. The creation of a specific act of drawing occurred *within* the realm of convention rather than opposed to it. In this way Pei was able to exploit the influence imposed by the drawing tool directly on the drawing surface, while constructing the (conventional) plans of the

National Gallery. The tool was not a rejection of all architectural convention but rather of those which were detrimental to the nature of the architecture.

The drawing machine employed by Diller + Scofidio used the conventions of architectural drawing in a different manner. While the I.M. Pei set squares were utilized within the conventions of architectural drawing, the Slow House drawing machine produced a *modified* version of conventional parallel projection. The drawing of the Slow House (fig. 4) was constructed using a specific tool which catered to the form of the architecture. However, the relationships imposed by the machine were not completely original to the Slow House but rather a tailored version of projective drawing. Rather than orthogonally projecting plans to sections, the specific 'radial projection' imposed by the machine splayed the sections in a manner relative to the curving form of the building. Due to the conventional projective qualities of the drawing it can be easily understood, while the modifications imposed by the specific machine bring these conventions into accord with the nature of the project. Again, the conventions are used in order to provide a basis for the specific act of drawing.

The specific act of drawing in the design of the new Colonial Tavern, however, is conceived *outside* the realm of architectural convention. The drawings which are produced using the modified pantograph are factures created using musical performance rather than conventional means. The

resulting drawings, because they are not conceived with a conventional mode of representation in mind, can not be interpreted as such. Returning to the example of Hans Sharoun and the Berlin Philharmonie, the building was designed outside of the grasp of conventional plans and sections. However, in order for it to be accurately understood and built, the design had to be described using a convention unfitting to its nature. The new Colonial Tavern, similarly, was conceived of without regards to conventional architectural making. Consequently, it required the parallel development of the project in plan, section and elevation in order for it to develop architecturally rather than exclusively conceptually. The necessity of architectural convention is not required in order to influence the design decisions made by the architect but rather to provide a frame of reference within which to work.

The text has demonstrated that the tools, instruments and machines used in the creation of architecture hold significant influence over the design process and subsequent outcome. However, the drawing equipment used in the development of the new Colonial Tavern has shown that while creation of specific tools and instruments can lead to specific results, the necessity for architectural convention must remain as a framework for architectural creation.

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