University of Cincinnati

Date: 11/1/2013

I, Andrew V Sheeks, hereby submit this original work as part of the requirements for the degree of Master of Architecture in Architecture (Master of).

It is entitled:
Scripted Narratives as Architectural Process

Student's name: Andrew V Sheeks

This work and its defense approved by:

Committee chair: Michael McInturf, M.Arch.

Committee member: Nnamdi Elleh, Ph.D.
Scripted Narratives as Architectural Process

A thesis submitted to the
Graduate School
of the University of Cincinnati
in partial fulfillment of the
requirements for the degree of

Master of Architecture

in the School of Architecture and Interior Design
of the College of DAAP
by

Andrew Sheeks
B.S. Arch, 2008

November 14, 2013

Committee Chair: Michael McInturf, M.Arch
Committee Member: Nnamdi Elleh, Ph.D
Scripting has become a buzzword in architecture, partly due to the proliferation of algorithmic and parametric design techniques in the field. While the influence of digital technology within architecture is without question, it can be said that the genesis of logically driven architectural processes greatly precedes the digital revolution. A comparison can be made between digital processes and how Fordism favored the assembly line process over product. Fordism and assembly line production methods were influential to architects during the first half of the twentieth century, as these designers emulated the aesthetic and formal qualities of industrially produced objects.

The system Ford invented had impact across all disciplines, including in architectural profession, and it resulted in the architect being delinquent as the creator of form, and becoming the controller of design processes similar to the assembly line. As architecture sought a means of expressing how it had been made, the diagram as a generative device became a prevalent method of expressing inherent logical operations.

This thesis takes the position that architectural objects are representations of inherent logical processes contained within them. These systems form abstract diagrams, or body-plans, which ultimately translate quite literally to architectural form. By analyzing existing (constant) spatial conditions and introducing (variable) contextual forces, a sequential process is constructed, which through a series of diagrams, narrates the logic of operations.
Contents

1. Fordism and Process

2. The Architect in the Information Age

3. Top-down versus Bottom-up Process

4. The Abstract Diagram

5. Design Response
Illustrations

1.1 Contained System (body-plan), Andrew Sheeks, 2010.

1.2 Event-chain, Andrew Sheeks, 2010.

1.3 Animated System, Andrew Sheeks, 2010.

2.1 Palladio and Corbusier (Colin Rowe), Andrew Sheeks, 2010.

2.2 The Manhattan Transcripts (series), Bernard Tschumi, 1976.

2.3 House IV (Peter Eisenman), Andrew Sheeks, 2010.

2.4 Kubus (series), 3xN, 2007.
http://www.3xn.dk (accessed May 14, 2010)

2.5 Museum Plaza (series), REX, 2005.

2.6 Bergen Fish Market and Square(series), Julien De Smedt, 2009.
http://jdsa.eu/bgn (accessed February 8, 2014)

2.7 Book Hill (series), Ja-Ja, 2009.

2.8 Seattle Public Library, Rem Koolhaas/OMA, 2008.

2.9 Phototropic Response information housing distribution, Parametric Set-up, Maria Bessa, 2008.
Bessa, Maria. “Unit Factor: Algorithmic Design.
1. Fordism and Process

The first half of the twentieth century saw technological innovation in industrial manufacturing that was manifested in the automotive industry in particular. This era is so associated with Henry Ford’s development of the assembly line as a method for mass production that the ensuing economic system is now referred to as Fordism.\(^1\) Fordism is most commonly associated with mass production, mass consumption, and the standardization of products, task specialization via an assembly line and the elimination of skilled labor in the process.\(^2\) In what has become most influential to field of architecture, Fordism introduced a spirit of favoring process over product.\(^3\) A systemic production method constitutes an embodied sequence of operations similar to an algorithm or body-plan, concepts that are prevalent within architecture discourse nearly one hundred years later.

The Fordist system brought with it a profound change in the method of making, or the material process. Contrary to a traditionally crafted object, in which case an artisan assumes top-down control of the production process, utilizing an array of tools to complete a task, Fordism ran on the speed and efficiency of an assembly line system, whereby individual tasks were specialized and positioned strategically within a linear process. Within that process exist different hierarchies of relationship between elements. At the broadest level, the process is a singular, contained system. Within that system exist individual tasks, each positioned strategically in front of and behind another. Lastly, there are influences lying outside of the contained system that drive the physical flow of materials through the system. In terms of Ford and Model T production specifically, the contained system was manifested by Albert Kahn’s factories at Highland Park and River Rouge, Michigan. The factory provided not only housing in which these processes were carried out, but represented the avenues and limitations through which the system could run. Workers, tools and machines at each stage along the line ultimately form an event chain, or sequence of operations. Forces driving the event chain include, among others, financial factors, consumer demand and temporal aspects as set by managers. With these structures running in unison, the process was carried out inexpensively and efficiently.

Inexpensive and efficient automobile production, or more likely the processes which made this possible, was of significant influence to progressive architectural thinkers of the era, ultimately becoming the impetus for the Modern movement. The appeal to architects of this period was the fact that for the first time commercially produced automobiles were being made widely available for the average person, embracing the technological zeitgeist, while buildings were still

1 (Smith, 1993)
2 (Toliday 1987, 2)
3 (Gartman 2009)
The term script evokes multiple interpretations when discussed within architectural discourse. On one hand, the word script refers to a codified set of instructions, or an algorithm, which is authored by a designer and entered into a particular piece of software. In this scenario, the script is used to perform operations which extend beyond the original functionality of the program as intended by its original creators, and/or to perform complex operations of which the human mind is incapable or comprehension.
1.1 contained system (body-plan)

1.2 event chain

1.3 animated system
being designed in historical styles and with the inherent bias of the artist-as-genius. The notion that buildings could be produced in the same way that automobiles and household objects were thus represented a way for avant-garde architecture that was free from the shackles of tradition and historicism. Ford’s Model T production ultimately became the symbol of this movement as the desire for freedom through mobility became the essence of modernity.\(^4\) Le Corbusier adopted it wholesale in the book *Vers une Architecture* by illustrating how the assembly line could be a model for building production.

It can be said that the Modernists were not initially interested in ornaments as it reminded them of the ancient way of practicing architecture. Thusly, the Modern aesthetic became free of ornament and decoration, as if they had been derived from processes informed by the same economic and utilitarian considerations as an industrial product. The Fordist-era architect’s preoccupation with the industrial process thus represents an initial step away from the artist-as-genius notion and top-down form-making (prescribed aesthetic and formal conditions are of primary concern) and toward bottom-up form-finding (process is primary, form/aesthetics are secondary).

While it is without question that certain technological innovations have always been influential to architectural (and all cultural) objects, the Fordist era contributed influential theories to the process of making that would remain relevant within architectural discourse even as relevant contemporary technologies would evolve and change. The notion that buildings could be designed as if machines produced them was novel at the time, and certainly influential to latter historical periods when buildings could in fact be designed by machines.

\(^4\) (Gartman 2009)
2. The Architect in the Information Age

Fordism as the dominant economic system would eventually be replaced, but preoccupations with systemic process and artistic concessions given to machine participation would remain relevant. The 1960s saw architect change their objectives from formal expression driven design to process driven pursuit in design.

By mid-century, the Fordist system was at a crisis. Increasing demand of consumers for diverse and changing goods was lowering labor productivity and increasing production costs.\(^1\) Coupled with technological innovation in communication and information technologies, this would mean the end of Fordism as the dominant economic system. Modelski and Thompson cite 1973 as the year that post-Fordism emerged.\(^2\) Advanced societies no longer relied on heavy manufacturing but rather the service and information industries.

Out was the era of the standardized product experiences and market segments distinguished by consumer type rather than social class. Whereas Fordism would be epitomized by mass production, consumption, the standardization of the product and linear processes, post-Fordism is characterized by attributes such as small-batch production, specialized products and jobs, and perhaps most importantly information and communication technologies.\(^3\) If the mantra of Fordist society was the standardization of the product, the mantra of post-Fordism would be that of flexible specialization, “characterized by new principles in production, including specialist units of production, decentralized management and versatile technologies and workforces, to satisfy increasingly volatile markets.”\(^4\)

Modernism had evolved from a desire to express the freedom of mobility that inexpensive automobile production had promised. On the contrary, this system would have the opposite effect, becoming a demobilizing force on the working class. The very symbol of freedom—the automobile—was dependent on processes that required skill-less, repetitive work. As David Gartman writes:

As the producer of the first affordable automobile, the Model T, Henry Ford promised to bring to the masses of consumers the essential freedom of modernity—mobility. But as the father of mass production, he threatened to simultaneously enslave these masses in skill-less, repetitive work along the assembly lines that produced their cheap vehicles of freedom.\(^5\)

Despite the fact that Fordism had spawned interests in systemic processes, Modern architecture (the

---

1 (Gartman 2009, 313)
2 (Modelski 1996)
3 (Amin 1994)
4 (Amin 1994, 2)
5 (Gartman 2009)
On the other hand, architecture had already been engaged in scripted processes prior to the digital revolution. As architects looked for ways to make up for the social and aesthetic failings of Modernism, they actually began to borrow from one of the Fordist period’s largest contributions—the favoring of process over product. The growing discontent with Modernism coupled with heightened interests of process led to the emergence of the generative diagram as a device which would alter popular thinking regarding making and the material process in architecture.
We see with the rise of the information architects after 1960 the true genesis of architectural scripts—in this sense the script being the narrative of a logical process—and a tradition of representation that has endured among the avant-garde.
Machine aesthetic in particular) resulted only with superficial imitations of industrial products created by and expressed through the act of drawing. It failed to represent any actual changes in attitude regarding the role of the architect. Just as Fordism had a profound effect on thought regarding the process of making architecture and design aesthetics during the first half of the twentieth century, the rise of post-Fordism and its associated technologies would have an equally profound affect during the latter half. Patrick Schumacher has said, “It is the task of architecture and urbanism to organize and articulate the increased complexity of our post-Fordist society.”

In order to execute this “task”, the dominant mode of representation for architects needed to shift away from drawing into something that could better reflect these repositioned interests. This would ultimately affect the larger role of the architect himself. Somol writes:

Thus, the rise of the diagram, a more polemic device than the drawing, accompanies a breakdown of the post-Renaissance consensus on the role of the architect, and achieves its apotheosis with the emergence of the “information architects” (or architect-critics) after 1960.

The rise of the information-architect symbolizes the architect’s evolved role from controller-of-form to controller-of-process. This transition would not have been possible without a reliable procedural method by which the architect could articulate the design process by entering himself into an interstitial place between and initial ideal and its ultimate result. The information-architect became of influence at this time, looking to fully exploit systemic processes as a design technique by using the diagram in a generative role. Architectural objects would thusly become a manifestation of the sequences and logical operations by which they were generated. Peter Eisenman writes:

As a generative device in a process of design, the diagram is also a form of representation. But unlike traditional forms of representation, the diagram as a generator is a mediation between palpable object, a real building, and what can be called architecture’s interiority. Clearly this generative role is different from the diagram in other discourses, such as the parsing of a sentence or a scientific equation, where the diagram may reveal latent structures but does not explain how those structures generate other sentences or equations.

Eisenman exhibited this vision through a series of houses between 1967 and 1975. Each house formed via a sequence of transformations, depicted through

6 (Schumacher 2009, 15)
7 (Somol 1999)
8 (Eisenman 1999, 27)
a series of diagrams notating the process of formation in a linear, sequential and logical manner. This method applies the Fordist notion of contained linear systems directly to an architectural object: each transformation is link in the event-chain, and the house comes to be as result of each sequential action as the system is run.

Eisenman opposed the notion of artist-as-genius and looked for an “objective knowledge that lies outside the artist.”9 Essentially, each house contains an inherent autonomy, with the knowledge and ability to emerge and form from an initial state. Rather than being acted upon, the structure arranges itself. The chosen mode of representation illustrates the logic of operations, and the resulting object is essentially a representation of the logic itself.10

Therefore, while the diagram in its analytical role may bring to light latent structures of organization as demonstrated by Wittkower and Rowe’s analysis of Palladio and Corbusier, the diagram in its generative role reveals latent processes of formation.11 By establishing himself within this interstitial place between idea and product, the architect no longer concentrates as a controller of form; rather he becomes a controller of process. Ali Rahim writes, “These new modes of thought co-evolve with the generative potentials, force fields and conceptual diagrams. Together with the

use of high-end computer software packages, they make possible the condition we call ‘systemic delay’. By this we mean the temporal interstice of conceptual development between an initial idea and its material form.”12

What happens then is that, in contrast to Eisenman’s early houses, formal generation is not isolated and self-referential, but outward looking and largely contextually influenced. Eisenman himself adapted in this manner, as his work became more focused on a way to represent absences, or voids, through built form. What emerges from this is a second major element, the presence of external forces acting upon a system, or more simply put, inputs.

Eisenman’s presentation of sequence and logic (or in other words a script, or narrative) emulates the systemic processes of prior industrial practices. This is essentially the birth of algorithmic processes in architecture; something that would later be coupled with digital technology would lead to the proliferation of Parametricism.

Parametric designers often rely on algorithms to simulate natural models of evolution and growth. An algorithm is essentially a sequential narrative, or script. This term script evokes multiple misunderstandings. On

9 (Curtis 1983, 234)  
10 Ibid.  
11 (Eisenman, 1999)  
12 (Rahim, 2000)
one hand, a script is a codified set of instructions, or an algorithm, authored by a designer and entered into a piece of software. David Berlinski defines algorithm as, “a finite procedure, written in fixed vocabulary, governed by precise instructions, moving in discrete steps that sooner or later comes to an end.” In this sense, the script is used to perform operations extending the original functionality of a program and/or to perform complex operations that only a computer can calculate and the human brain cannot.

Scripting, as a method, has become a key component of parametric design technique. On the other hand, architecture of the post-Fordist era has always been characterized by its favoring of process over product. The architects of Modernism attempted to exhibit their interests with the industrial process with their work. Although their work attempted to emulate the industrial process (at least aesthetically), the process of making architecture that they employed was still top-down, relying heavily on the act of drawing as the dominant method for representation. It was not until the post-Fordist era that architects were able to fully integrate systemic, linear processes into their work. This was made possible by digital tools that would come to be associated with Parametricism; But prior to this it was the new methods of representation - the generative diagram – that illustrated meditative processes and would have the largest effect on architectural form.

Architecturally, we see a continuing desire for architects to become more “hands off” in terms of formal decision-making. Eisenman’s diagramming in the late 1960s through mid 1970s was revolutionary because it introduced the concept of scripting architecture – meaning that conveyed a narrative explaining how elements might arrange themselves.

Thus, we see with the rise of the information architects after 1960 the true genesis of architectural scripts—in this sense the script being a story, or explanation, or logical processes and rational decision making—and a tradition representational process which has endured and influences the work of the digital avant-garde.

13 (Bessa)
14 (Terzidis, n.d.)
2.1 - Palladio and Corbusier (Colin Rowe), Andrew Sheeks, 2010
The diagram’s traditional usage had been as an analytical device. Peter Eisenman attributes it as having initially emerged from Rudolf Wittkower’s use of nine-square grids to describe Palladian Villas in the 1940s. These diagrams, he says, explain Palladio’s work, but do not explain how he worked. The diagram as a generative device exposes the design process.
2.2 - The Manhattan Transcripts (series), Bernard Tschumi, 1976
Bernard Tschumi’s Manhattan Transcripts (1976-1981) illustrate the process of sequentially translating image to diagram, and then diagram to parti. The project interpolates a cinemagraphic narrative into an architectural language.
The algorithmic nature of Peter Eisenman’s work (figure 2.4) remains influential in contemporary practice, as seen in the diagrammatic processes exhibited by contemporary practitioners. As an example, a series of diagrams detailing the formal logic behind 3xN’s Kubus (2007) operate very much in the same manner as those of Eisenman’s House IV (1975). Both diagrammatic processes notate the building’s process of formation in a sequential, linear and iterative manner.
2.5 - Museum Plaza (series), REX, 2005
The diagrammatic style employed by REX to explain the formal logic of the Louisville Museum Plaza (2007) is a short series of operations that playfully simulate the manipulation of the city’s existing skyline. An algorithm consisting of cut, shift, rotate and paste operations exhibit how the projects ultimate formal composition came to be.

The work of Danish architect Julien De Smedt is also characterized by an algorithmic approach to diagramming, yet it also encapsulates emergence principles that are closely related to the work of parametric designers, as he looks to external factors that influence design process. His diagrams for the Bergen Fish Market and Square (2009) demonstrate how site forces, context, usage, program and environmental factors inform the project (figure 2.6). Each diagrammatic frame exists somewhere between the idea and its ultimate form, similar to what Rahim describes as systemic delay.
2.6 - Bergen Fish Market and Square (series), Julien De Smedt, 2009
Similar to the manner in which JDS allowed external forces to influence the Katharinen Quarter project, Ja-Ja looks internally to program as the primary factor of form. In diagramming Book Hill (2009), the architects begin by outlining the programmatic needs of the project, then arrange these programmatic blocks together into a conceptual string that forms the genetic material for the project. Other conditions such as context and site restrictions then act upon this abstract diagram, or body-plan, resulting in the projects ultimate formal condition.
2.7 - Book Hill (series), Ja-Ja, 2009
At OMA’s Seattle Public Library, the book flow spiral in conjunction with contextual view considerations become the genetic information that generates the abstract diagram. Formal autonomy is derived from the project’s response in exposure to this information. The abstract diagram quite literally translates into the library’s ultimate appearance.
2.8 - Seattle Public Library, Rem Koolhaas/OMA, 2008
2.9 - Phototropic Response information housing distribution, Parametric Set-up

Parametric Setup.

Independent variables
- 01_seedRadius = individual space Radius
- 02_totalFloorHeight

Dependent variables
- feature CoreRadius (GC.GraphicVariable)
  - Value = 2*seedRadius / N*FloorHeight / Tan(31)

- feature sunPoints_circleGC.Circle
  - ContextPoint = coordinateSystem3D; Radius = 2*(CoreRadius + seedRadius / Tan(31))
  - Support = coordinateSystem3D.X/plane;  

- feature OuterEnvelope (GC.GraphicVariable)
  - Value = CoreRadius + 2*SeedRadius

- double radius3D = Random(30° ~ 15°) * FloorHeight / 2 * Tan(31°) / FloorHeight
The scripted narrative becomes quite technical when it is used in digital practice. The algorithm in this case is able to calculate formal responses to variable conditions outside of the capabilities of human comprehension. We see the architect working hand in hand with the machine, controlling process rather than form.
3. Top-Down versus Bottom-Up Process

The traditional material process entails that the physical characteristics of a crafted object will be a direct and predictable result from the tools and materials available to its maker.¹ Eisenman’s houses displayed how architecture could be derived not only from a top-down procedure of form-making but rather a bottom-up process of form-finding.

The role of the architect in the post-Fordist era has shifted from controller of form to controller of process. This transition takes root in the Fordist architect’s preoccupation with industrial processes. Architects had tried to design buildings as if they had just rolled off the assembly line, a theoretical concession to the machine as a participant in the act of making. The information-architects who embraced this notion adapted the diagram as a generative device, giving architecture a new medium within which to work— the meditative place between initial thought and architectural object— and sought to present an architecture which had autonomous qualities, self-generating in response to external influences. The process architect uses logical systems to generate form. Rather than declaring what the architectural object is to look like, it is the role of the architect is to articulate the process of making and decide what external data is appropriate a design informant.

If the architectural object created was essentially a representation of the logical process, we see an important shift in thought regarding the material process. The artist-as-genius model implies top-down form making, whereby the diagram is a post-representational device for analysis. What Eisenman had done was open the material process to the meditative place between idea and object, or what Ali Rahim would refer to as systemic delay: “the temporal interstice of conceptual development between initial idea and its material form”.² The unique advantage afforded by the systemic approach to design is the ability to design beyond the material process. This is essentially what Peter Eisenman had said in reference to the diagram in its generative sense:

“But unlike traditional forms of representation, the diagram as a generator is a mediation between palpable object, a real building, and what can be called architecture’s interiority.”³

The digital revolution and the proliferation of computational tools within the field of architecture have resulted in architectural responses to the increased demands of the times. Malcolm McCullough writes, “Now that technology lets us treat abstract schemas as objects for manipulation, it makes no more sense

¹ (Rahim 2000)
² Ibid.
³ (Eisenman 1999, 27)
to design by drawing each line and modeling every surface as it does to drive an aeroplane down a highway. The more kinds of representation that software lets us manipulate, the more opportunity we have to take design to a higher level.”

As computing has become more prevalent as a tool in response to changing societal needs, parametric tools for animation, simulations, form-finding, modeling and scripting have developed. The availability of these tools, coupled with the theoretical interests in science and complexity systems the need to meet the socioeconomic demands of post-Fordism has resulted in emergence of Parametricism as the dominant architectural style of the avant-garde in response to the need to meet the socioeconomic demands of post-Fordism.

Contemporary avant-garde architecture and urbanism seek to address this societal demand via a rich panoply of parametric design techniques. However, what confronts us is a new style rather than merely a new set of techniques. The techniques in question – the employment of animation, simulation and form-finding tools, as well as parametric modeling and scripting – have inspired a new collective movement with radically new ambitions and values. In turn, this development has led to many new, systematically connected design problems that are being worked on competitively by a global network of design researchers. Over and above aesthetic recognizability, it is this pervasive, long-term consistency of shared design ambitions/problems that justifies the enunciation of a new style in the sense of an epochal phenomenon. Parametricism is a mature style. There has been talk of “continuous differentiation”, versioning, iteration and mass customization among other things for quite some time now within architectural avant-garde discourse.⁵

Parametricism marks the existence of the information-architect and the quest for an autonomous architecture at its highest point. The information-architect arrived on the scene with representational styles that reflected process-driven approaches to architectural design and challenged drawing as the dominant and traditional mode of architectural representation. In what further illustrates the architect’s movement away from top-down concerns, representational techniques were explored matters of process (rather than product) through a narrative or sequence.⁶ Terrence Riley writes, “The temporal dimension implied by the narrative intermingles with the formal and spatial dimension, which opens up the projects to subjective content and interpretation in contradistinction to the purported ‘objectivity’ of the perspectival view.”⁷

⁴ (McCollough n.d.)
⁵ (Schumacher 2009, 15)
⁶ (Kipnis 2001, 9)
⁷ Ibid.
Designers today are equipped with a singular, common tool(box) that can be modified/extended to perform/solve a seemingly endless amount of tasks/problems: the computer. Digital tools, parametric techniques, and the information-architect’s favoring of process over product has led to the replacement of top-down “form-making” with bottom-up “form-finding.”

While Patrick Shumacher declares Parametricism as the stylistic successor to Modernism, Postmodernism, Deconstructivism and Minimalism, Michael Meredith argues that recent parametric work ultimately a “post-Postmodern” architecture:

> Therefore it is not surprising that the first significant impact of computer applications on architectural design would have more to do with formal and stylistic research (as it was with a large part of post-modern scenographic investigation) than with any exploitation of the capacity of the new technologies for redefining the way architecture might be conceived of and produced in response to the fundamental link established between information and matter.  

The usefulness of Parametricism as a method comes from its ability to precisely formulate and execute “intricate correlations between elements and subsystems.” Parametricism adheres to a set of stylistic ideas, specifically the treatment of all forms as being parametrically malleable, forms that differentiate gradually, and forms that are systematically correlated to one another. “The Parametricist sensibility…[aims] for maximum emphasis on conspicuous differentiation and the visual amplification of differentiating logics… it is the elegance ordered complexity in the sense of seamless fluidity, akin to natural systems that constitute the hallmark of Parametricism.” While the popularity of parametric techniques and the widespread usage of these in practice and the architectural academy has resulted in common aesthetic characteristics, in disregarding the superficial aesthetic qualities of parametric techniques we see that systemic theories brought forth by the Fordist process remain.

---

8 (Rahim 2000)  
9 Ibid.  
10 (Meredith 2008, 5)
4. The Abstract Diagram

In studying the trajectory of the generative diagram since Eisenman’s early houses, we see the emergence of a number of similar elements, the first among them being the persistence of sequence. Perhaps borrowing from the Fordist tendency to privilege process over product influenced by the individualized tasks of human workers on an assembly line, architects have exhibited an interest in representing the material process in a step-by-step manner. This illustrates how formal generation is envisioned as a logical process that contains an inherent logic, and that contrary to previous generations of “form-makers” architects now are controllers of process. While there is clearly still a great deal of subjectivity present in this process, we see an effort on the part of the architect to disassociate himself from arbitrary decision-making. The material process, then, becomes one that is emergent, or bottom-up rather than top-down. Referring back to the Fordist production system, the sequence of operations that occurred along an assembly line occurred within the contained system, ultimately manifested by the factory itself. In bottom-up architectural processes, the generative operations also occur within a contained system, often a script or algorithm. The embodied logical processes that dictate an architectural object’s generation constitute the body plan, or genetic algorithm of that object. De Landa writes:

To be able to apply the genetic algorithm at all, a particular field of art needs first to solve the problem of how to represent the final product (a painting, a song, a building) in terms of the process that generated it, and then, how to represent itself as a well-defined sequence of operations. It is the sequence of operations or, rather, the computer code that specifies it that becomes the ‘genetic material’ of the painting, song or building in question.

The topological nature of the genetic algorithm may be visualized as a diagram of the part-to-part relationship between elements within a system. The functional diagram, then, provides a means of representation for moving away from the design of a system to the design of a built architectural object. Historically, representation and meaning has been an important theoretical issue, particularly in the postmodern era. The study of semiotics has contributed significantly to this. ¹

The genetic material of the object in question then is the logic of production. As we have seen, representation illustrates the logic of operations, and the resulting object is essentially a representation of the logic itself. A method of representation must be determined for the final product that expresses that

¹ (De Landa n.d.)
process which generated it, and then the process must be represented as a sequence of operations. While programmatic code becomes the “virtual DNA” behind a digital object when that object is created digitally, the algorithmic process that creates any objects, whether it be analog or digital, can be represented algorithmically, as illustrated by Peter Eisenman.

As it emerged among the information-architects of the 1960s, the abstract diagram has remained a practical method of generating architecture, whether it illustrates a sequential generative logic or the functional organization. The functional diagram is an organizing principle in the work of Rem Koolhaas and OMA, albeit in a less systematic and linear manner than in Eisenman’s work. In the Seattle Public Library project, conditions of interiority, such as the site location relative to Mount Rainier, the Elliott Bay, and views from Interstate-5, combined with specific site conditions such as the need for shade or natural light as prescribed by program, and the irrelevance of the Dewey Decimal system as means of organizing the library’s collections (in light of the age of new media) and the need for a new programmatic paradigm within the library, form the critical conditions of interiority and are form-defining principles.

While Eisenman’s houses were isolated objects in a vacuum acting upon themselves, we see architects today still with this desire to let and architectural object “design itself”, but often the formal gestures are more contextually driven by external forces. For example the work of Julien De Smedt uses the logical sequence in much of its work, utilizing the diagram as a means to integrate contextual influenced into the logical formations of his projects. Systemic design processes utilizing the diagram as a generative device has prevailed as a popular method among the architectural avant-garde.
5. Design Response

In response to the concepts outlined in this thesis, the design emerges from a linear systemic process of individual formal operations, a script in the sense of being that which illustrates and articulates the decision-making logic at each stage of the process. The operations performed within this event-chain, the logic of operations, are communicated sequentially through a series of diagrams, and the resulting architectural object is essentially a representation of the logic itself. Each individual operation is informed by that which came before it and thus informs that which proceeds, with certain external conditions being of influence as deemed appropriate and using computation techniques to extend beyond the capabilities of the human brain; this body plan is the abstract diagram from which the resulting form emerges.

The project positions itself somewhere between the desire to express autonomous formal logic [the idea of the linear, sequential diagram in the tradition of Eisenman], with the utilization of the computer to perform operations which the human mind cannot.

The project is a winter garden, positioned on Vine St. between 7th and 8th Streets, directly south of the Cincinnati Public Library's Main Branch. The project hopes to accomplish the a few things: Filling a spatial void along the Vine St. corridor of Downtown, south of Central Parkway Creating a complimentary, non-competitive public space for Cincinnatians, other than Fountain Square, which can be utilized year-round Replacing a surface parking lot (of which there are many in the area) with a pleasant, usable, and pedestrian-friendly space, providing a link between the Walnut Street entertainment quarter with the Northern half of the Central Business District (this includes the Library and its public amenities, Garfield Place and Court Street promenades).

The project is an enclosed public plaza. Programmatically, the space is open and flexible. Traditional plaza program includes:

- Places for public art
- Setting for recreation and relaxation
- Seating, tables
- Ability to host performances
- Café/vendors
- Alone vs. group

Quite simply, the design is for a large, open structure to house the space and protect from the elements. The massing responds to the boundaries of the site, the presence of a bus stop at its southern half, the contextual façade of the Library, and the alley way
which runs through it, connecting directly to Walnut.

The articulation of the façade was derived by interpolating the geometries of the site with major paths such as the pedestrian and vehicular traffic through and near the site.

The goal of the project is to identify parameters and formulate a procedural operation for the articulation of form.
Bibliography


Terzidis, Kostas. Tool-makers vs. Tool-users.
