

Proximate Architecture: Basis for a Pedagogy of Diagram

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Diagrams used in design processes exclusively serve the resultant object of the work, and we often understand diagrams in terms of how they might serve the discipline within which they are intended to function. In this sense, diagrams are a means to an objective that is distant from, and external to, the designer. However, diagramming intended for reinforcing cognitive capacities required for abstract thinking, comprehension of increasingly complex conditions surrounding a problem, and strategic planning reorients the intention back towards the student-architect. At the same time, this focus on process within the architect suggests a stratum of architectural definition that is innately internal, manifested within the conceptual, the virtual, and through the imagination. What occurs if we reverse our focus from the diagram's service to architecture to the diagram's service to the architect? How does the diagrammatic process serve the architect? How does diagramming develop understanding of architecture by shaping cognitive utility towards its concepts? How can we fold this into pedagogy and knowledge production to establish methods towards expansion of architectural cognition?

BASIS OF A DIAGRAMMATIC PEDAGOGY

“Architecture is not a language. Rather, architecture summons into appearance ways of thinking about the world that are otherwise unavailable; it is a particular mode of thought, one irreducible to other ways of thinking. And its images of thought have no lesser claim on the world than those of philosophy. This mode is not representation, but emanation – a showing forth of a world that exists but is not yet actualized.”¹

—K. Michael Hays, “Architecture’s Appearance and the Practices of Imagination”

The architect does not possess architecture. Rather, architecture is removed from the architect. Proximity as a variable in an architect’s relationship to their work seemingly opens the question of where architecture lies. The above quote implies that the architecture concept acts as an invitation of thought; a sense of architecture that manifests as action rather

than product. Simply stating that “architecture summons” engages architecture as an active agent, rather than dormant bystander. Architecture’s live state as “emanation—a showing forth of a world that exists but is not yet actualized” is the immediate progeny of the architect—rather than the final resting place of built form. In this context of architecture defined as process, buildings are dead architecture.

Humans are toolmakers and tool-users, and tools are extensions of our bodies intended for production. There are tools humans have employed throughout history to aid in our capacities of thought, intuition, conceptualization, imagination, and ideation. Our spatial and graphic modes of thought based on sight are distinct tools; innate and unique cognitive resources immediately adjacent to the human intellect that erase the proximity variable. These ‘modes of thought’ are exactly that—thought. These modes incorporate sight, place, and matter that are not required to drift into actuality to exist. While these are components that are so often associated with diagrammatic representation, it is possible that they are never re-presented outside of cognitive space. In much the same way that architecture can exist as an action—a thing done, rather than a thing made—so can one of its elementary tools, the diagram.

The basis of a diagrammatic pedagogy includes an objective of establishing architecture as an immediate product of the architect, an approach to diagramming as a primarily generative tool, a concept of the diagram as an architectural embodiment in its own right, and a capacity for liberating the definition of diagram from its prerequisite material supposition. A framework for a pedagogy that leverages the diagram requires exploration of its role in architecture and diagrammatic reasoning; its necessity of-, and capacity for-, abstraction; and its visual, spatial and graphic modes of cognition. These departure points are intended to provoke multiple conceptualizations of what a diagram is, what to diagram something means, how a diagram is formulated, and the diagram’s potentials of utility. Concepts such as the active transfer of ideation to visuality through the diagram, the conceptualization and assembly of the diagrammatic site, and the various methods and materials that provide creative opportunity for physical translation of the figural diagram image into the literal diagram object comprise the primary components of the diagrammatic mechanism. The

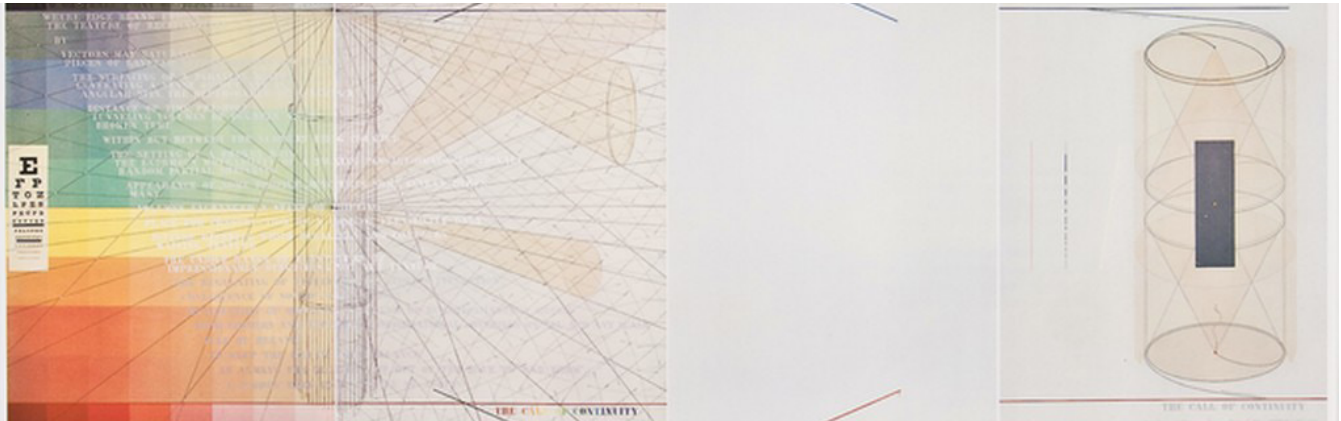


Figure 1. Shusaku Arakawa's compositions intended to engage the viewers cognition by challenging them with the compression of verbal and visual information. Shusaku Arakawa, (1936 - 2010). 1982. Untitled. Works on Paper. Place: The Trout Gallery, Dickinson College, Gift of the Doctors Meyer P. and Vivian O. Potamkin. https://library.artstor.org/asset/ATROUTIG_10313759660.

application of this mechanism endeavors to extend normative diagrammatic reasoning and observation into concept generation and aims to superimpose an architecture of process onto cognition, thereby establishing the student-architect's unique architectural mode of thinking through diagrammatic operations as "autographic" architecture², placing the concept of architectural production as an immediate extension of the student-architect.

PROXIMITY OF ARCHITECTURE

In a description of work he planned to pursue, Shusaku Arakawa stated that he "want(s) to make diagrams on canvas of our imagination which is itself diagrammatic."³ His resultant paintings exemplify a collapse of the imaginary action with its materialization, and supplants representational mimesis for emanant process of cognition; the irreducible modality Hays refers to in this article's introductory quote. (See Figure 1.) Similarly, through the self-inflicted constraints built through various obstructive mechanisms, Matthew Barney's early Drawing Restraint works collapse corporeal methods of production with their produced matter; matter that, if considered as a diagram, embodies not only the conceptualization of the artwork, but the actualized restraint mechanizations used in its production. (See Figure 2) Arakawa's and Barney's works, both implying a compression of the made to the maker using the media at their disposal, suggests a parallel course of exploration of the architect-architecture relationship via the diagrammatic vehicle.

Anthony Vidler and Stan Allen have both addressed the proximity of architect to architectural work. Vidler provides context within which the architectural diagram has operated throughout the late 20th century. Directly invoking the works architects whose work may have been deemed as 'paper architecture' at some point, he illustrates the impact that purely critical work has had on architecture.⁴ These critical experiments of architecture, sometimes intended to

remain as representation, approach architecture's existential question regarding what it is, and to do so he references certain relational conditions between the architect, architecture, and diagram agents. First, Vidler references Walter Benjamin's assertion that the drawings and representations created through architectural design processes do not function as reproductions – they are the source of architecture itself.⁵ He proceeds to find similarity in Robin Evans' assertion that architects are "never working directly with the object of their thought, always working at it through some intervening medium."⁶ Third, he references Peter Eisenman's work and theories accompanied by R.E. Somol's critiques, which conclude that the diagram has superseded its representational limits into an architectural entity in itself.⁷

Furthering these three architect/architecture relationships, Stan Allen's reference categorical differentiation between autographic and allographic work provides distinction between what the architect literally manipulates and what the architect figuratively informs by placing the architect's hand either within the boundaries of various representational artifacts or at a distance from the architecture as built form, respectively. This description of autographic work presents a condition of immediate connection between architect and product implying a high degree of authenticity embedded in the work.⁸ A pedagogical benefit of further closing the distance between student-architect and architecture is presented when representational artifacts are considered as an autographic degree of architecture, as opposed to the allographic degree of architecture as built form. To go one step further, the inclusion of process and strategy as architecturally embodied introduces a non-material conception of autographic architecture. The question this assertion presents is how to define strategic cognitive frameworks as embodiment of architecture within a teaching mode focused on diagrammatic process. Further, whether or not the result would be

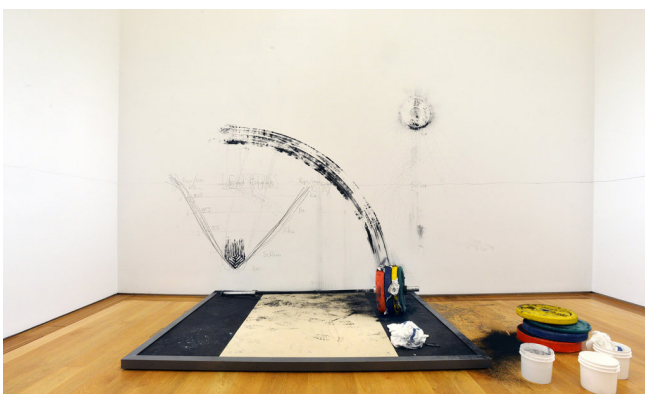


Figure 2. (top) Matthew Barney's *Drawing Restraint 20* in process. Matthew Barney, *Drawing Restraint 20*, 2013, Documentary Photograph. Ari Marcopoulos, <http://www.adamartgallery.org.nz/past-exhibitions/10433/>. (bottom) Matthew Barney's early *Drawing Restraint* works result in a separation of the components engaged in the creation: the diagrammatic agent (the artist, not pictured), the diagrammatic mechanism (the tool of inscription), and the diagram (the resultant trace on the wall). Matthew Barney, *Drawing Restraint No. 20*, various media, <https://www.nytimes.com/2013/05/10/arts/design/subliming-vessel-drawings-of-matthew-barney-at-morgan.html>.

a legitimate degree of architecture internal of the student-architect; a framework woven within the development of their architectural comprehension.

For the purpose of establishing a relational categorization that occurs between them, it is important at this point to understand the agents at play in this scenario as architect, architecture, and diagram. Vidler identifies various modes in which diagrams have interacted with architecture throughout history and the various architectural movements of the 20th century. Using Wittkower's iconic nine-square diagrams, Vidler alludes to the separative relational function of the diagram regarding its proximity to architecture; the separation of the simplified grid from the spatially rich *poché*-heavy plans of the original architectural representations being a moment of diagrammatic relation to architecture. Within Modernism, Vidler identifies representational abstraction as diagrammatic and associated with a reduction of the distance between diagram and architecture; a relationship in which the diagrammatic

effect is one of the erasure of uniquely identifiable elements of architectural objects in service of the production of a universal spatial typology. Referencing Toyo Ito's description and coining of Kazuyo Sejima's work as "diagram architecture", Vidler notes that "architecture itself becomes joined to its diagram"⁹; relational typologies of union, amalgamation, attachment, fusion come to mind here. Finally, Vidler acknowledges that "the intersection of diagram and materiality impelled by digitalization upsets the semiotic distinctions drawn by Charles Sanders Peirce as the diagram becomes less and less an icon and more and more a blueprint—or, alternatively, the icon increasingly takes on the characteristics of an object in the world."¹⁰ This removal of the semiotic utility from the architect's diagrammatic method and its replacement with the immediate topographic materialization demonstrates a compression of diagrammatic intent and the representation of its material form.

The diagram's effects on the evolution of architectural production have been solely between the tool and the product—between the diagram and the architecture. Yet, as with any productive endeavor, the tool lays dormant in terms of the product for which it is intended until a productive agent activates the tool. To develop a pedagogy focused on the diagram within architectural education, an initial inquiry into the relationship between diagram and architect is prudent. How does the process of diagramming inform a student's architectural mode of thinking and can it be leveraged? What are the relational typologies that need to be understood between the diagrammatic process and the architect? To begin to answer these questions, an exploration into the cognitive utility of diagrams and methods of diagrammatic implementation is required.

A SCOPE OF DIAGRAMMATIC UTILITY: DIAGRAMS AND COGNITION

In much of the literature on cognitive science and theory, the normative diagrammatic typologies referenced may not be immediately relatable to many of the sorts of diagrams used in a design discipline. However, the abstraction, ideation, and data organization assets of cognition, among others, studied within the cognitive science and theory disciplines are applicable to an architectural pedagogy based on the diagram in which leveraging these assets is a major objective.

Within a diagrammatic pedagogy, a constructively loose, interpretable, and malleable definition for the concept of diagram is imperative and provides opportunity for the propagation of vast potentials of creative liberty. In broadening the scope of diagrammatic typology from basic graphic representations "to include any representation of a 'skeleton-like sketch of relations'", and in expanding the definitive limits of diagrams to include "gestures, models, and language"¹¹, Tylén et al. invites disciplines that engage diagramming as a tool of production to utilize all the cognitive assets developed by diagrammatic

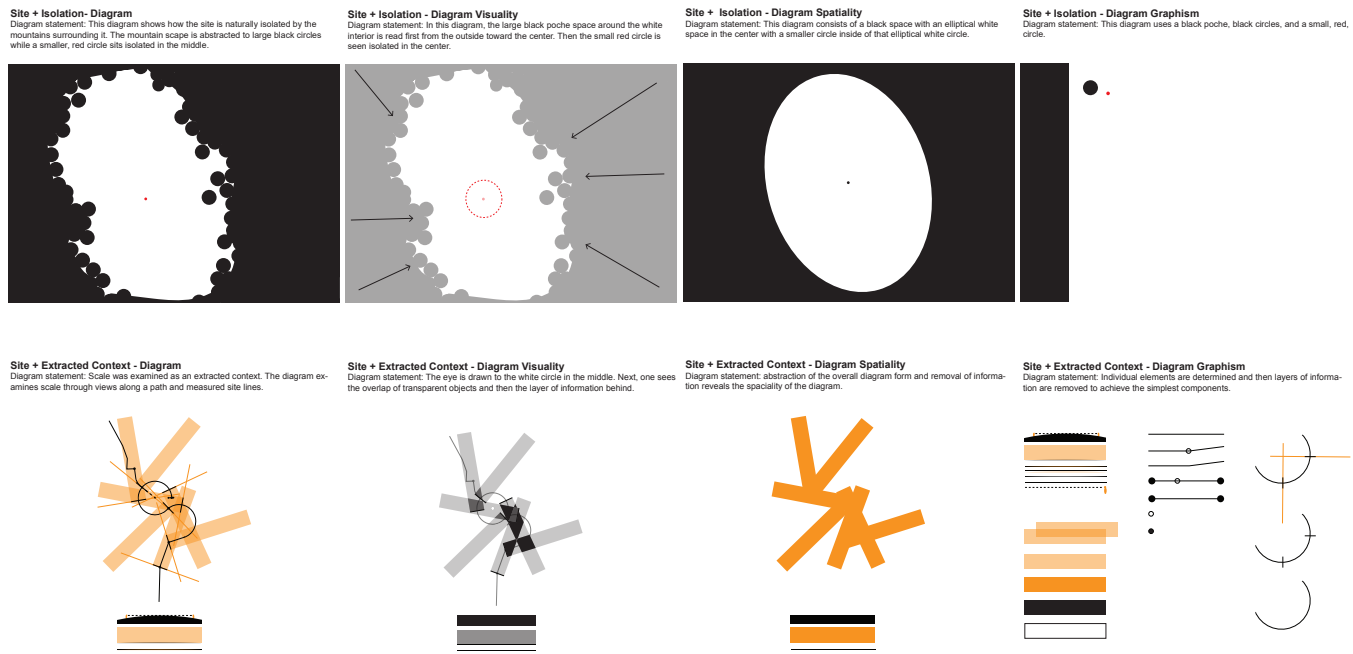


Figure 3. ARCH 3800:Diagrammatic Processes - Example of 3rd year student concept diagrams integrated into a project site condition. From left to right: The original concept diagram, the diagram deconstructed per the student's interpretation of visibility criteria, the diagram deconstructed per the student's interpretation of spatiality criteria, and the diagram deconstructed per the student's interpretation of graphism criteria. *Top row by Carla Slabber; bottom row by Jake Buell.*

reasoning, and to bend their specific values towards particular disciplinary objectives.

In their essay *Diagrammatic Reasoning: Abstraction, Interaction, and Insight*, Tylén et al. propose to extend Charles Sanders Peirce's definition of diagrammatic reasoning into a framework that describes potentials and effects of "diagram manipulation"¹² with the intent of exploring the catalytic potentials diagrams provide in the development of communication and novel methods of idea generation. Their extension of Peirce's concepts in diagrammatic reasoning includes four foundational premises upon which this notion is built: that diagrammatic reasoning 1)"relies on external structures", 2) makes "abstract relations perceivable", 3) makes "[abstract relations] manipulable", and 4) occurs in a communal space.¹³ While the diagram's externalization of cognitive material is an obvious, yet crucial, element of architectural diagramming given its communicative function, the most relevant foundations for exploring a pedagogy of the diagram are those that support methods of exposing abstract insights from the diagram referent and the diagram's ability for manipulation. (See Figure 3.)

Though it is ubiquitous across the disciplinary fields utilizing diagrams, the multitude of methods and media available in architectural study to achieve externalization supports its necessity of consideration. The delineation of the boundaries enveloping what is considered a diagram object is at the very base of this premise. The externalized thought makes cognitive

material visible by providing documentation of the thought processes resulting in working memory support and extension of the mind.¹⁴ Considering such liberties as describing, among others, text as diagram¹⁵ and gestures as diagram¹⁶, diagrammatic pedagogy may include challenging the notion of how the diagrammatic externalization occurs. For instance, is the activity of a continuous sketch session within the scope of diagram, or is a diagram required to be specific bits extracted from the sketch? Essentially, can the externalized diagram be considered a process of externalization in addition to its documented artifact?

In addition to externalization, diagrammatic activity exposes abstract potential and relational connectivity through the practice of organization of disparate contextual elements into "perceivable configurations".¹⁷ These particular functions of diagramming may be analogous to analytical utility when applied to a design task or project. This involves not only the visualization of the elements of the design task at hand, but also the organization and reorganization of this data in ways that are intended to expose abstract potentials of the diagrammatic referent that are initially hidden to the diagrammer. (See Figure 4.) It is possible, however, to consider the potential of the exposing and connecting utilities of diagramming to be offered in a generative capacity, thereby extending the diagram's role out of a purely analytical function into the realm of innovative ideation.

The manipulation component of this argument is the most compelling towards a generative method within a diagrammatic pedagogy. It is posited that diagrams allow for abstract manipulation towards new insights and ideation through Peirce’s categories of the ‘corollarial type’ and the ‘theorematic type’ of diagram as dichotomous ends within this process.¹⁸ This distinction is analogous to the established differentiation of diagram usage of ‘explanatory diagrams’ and ‘generative diagrams’, the first being intended for documentation and/or analysis and the second towards processes of ideation.

Peirce’s distinction between these two categories of diagrammatic reasoning defines the results of corollarial diagrams as use of available information towards synthesis directly legible from the diagram itself; supporting the craft involved in the diagrammatic skills of analysis and effective communication of pre-established concept. Conversely, theorematic reasoning is posited as active opportunity for manipulation of the diagram artifact intended for explorations towards innovative solutions for a problem.¹⁹ This distinction of theorematic reasoning is of particular interest in the pursuit for understanding the potential of generative processes within an architectural

pedagogy. While Peirce’s definitions are based in reasoning towards specified ends, the application of this theorematic diagram type to objectives of open-ended results engages the type as a vehicle for conceptualization.

The manipulation utility of diagrams incorporates two orientational directions – retrospective and prospective – positioned within diagrammatic processes, and each with their specific roles in knowledge production. The retrospective orientation serves an observational function, while the prospective orientation supports novel conceptualization.²⁰ Ultimately compared to “gestalt notions of fixedness and insight”²¹, this orientational distinction between modes of diagrammatic reasoning further informs an approach to a pedagogy leveraging the generative diagram. The fixedness mode of diagramming defines a process in which potential results are hindered by previous descriptions of enrooted data.²² The description of the insight mode of diagramming may be best explained through direct quote:

“Insight, on the other hand, is when the entrenched knowledge is discarded for the right solution. Diagrams afford insight

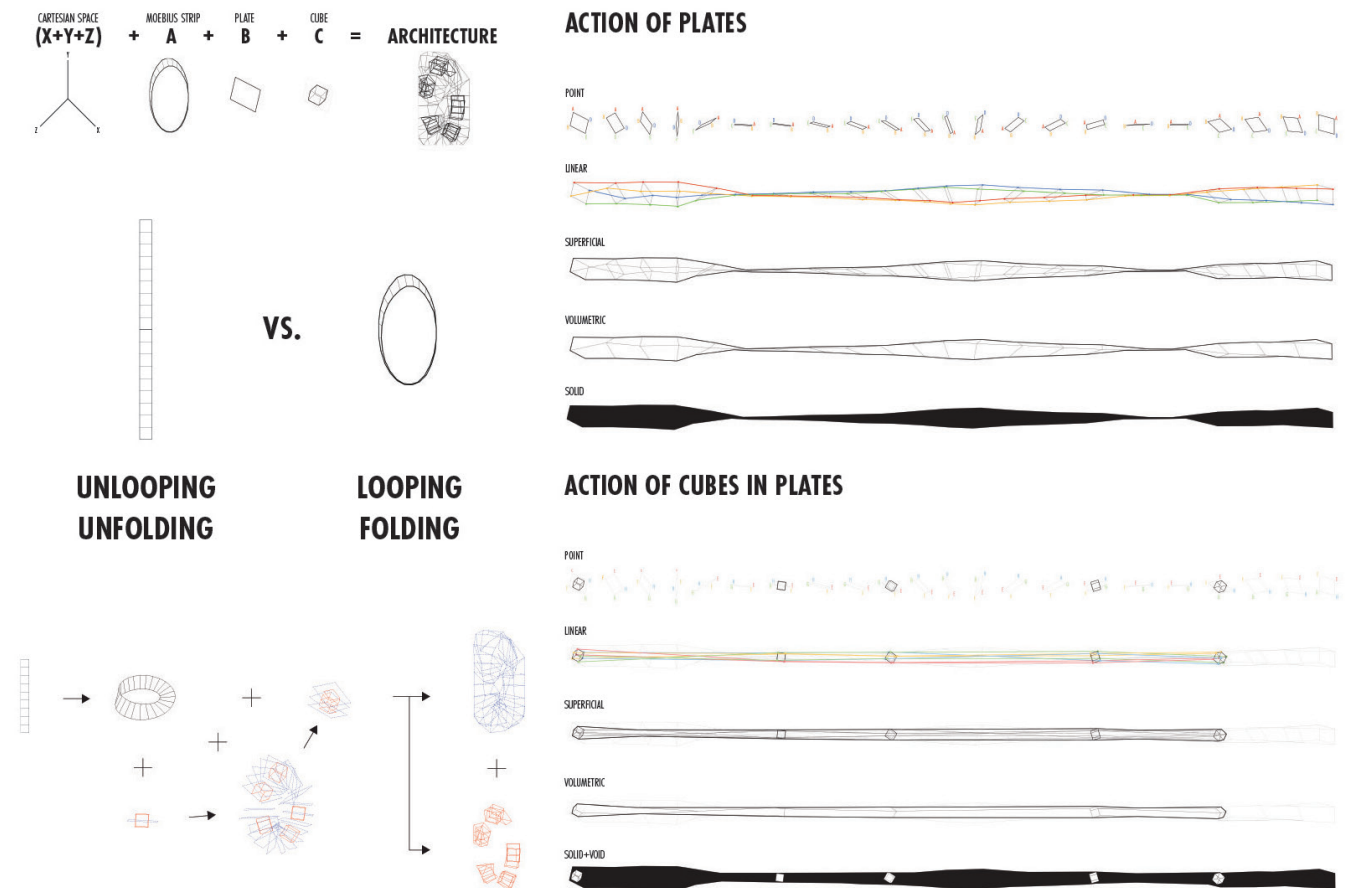


Figure 4. ARCH 3800:Diagrammatic Processes - 4th year level student work focused on deconstructing the diagrams of Peter Eisenman’s Max Reinhardt Haus. By analyzing these diagrammatic artifacts, the student seeks to expose abstract trajectories towards novel conceptualization. Work by DK Yoon.

because the solution is potentially present through a more or less simple manipulation. Exploratory diagram manipulations shifting attention to the right information and thus break loose of mental fixedness."²³

Making abstraction accessible and manipulable are prime components within a diagrammatic pedagogy, and it is this modality that offers a direct route to the utility of diagrammatic abstraction within the design act. The development of the skill of extracting the relevant data, determining appropriate connections, and synthesizing an abstract trajectory are solid components for a pedagogical method of exploring architectural concepts through a diagrammatic method. Diagrammatic processes in architecture provide the framework through which designers extract the information and/or influential contextual components they choose and organize for later use in the provocation of design. This notion of the insight as diagrammatic modality is a foundation of this framework.

SIGHT, SITE, MATERIAL: THE STUFF OF DIAGRAMS

Sybille Krämer examines cognitive utilities used in diagrammatic methods to make "visible and tactile" the ideas and thoughts that begin as theory, concept, and intuition through the exploration of cognitive conditions that diagrammatic processes engage. In a sense, Krämer is describing an epistemic engine. Driven by the concept of "operative iconicity" and fueled by the interactions between "visuality, spatiality, and graphism,"²⁴ this engine serves as one framework through which a pedagogy of diagram can be established. Krämer proposes that operative iconicity is composed of the "'saying' and 'showing'"—or the "epistemic" and "aesthetic" experience—within the diagrammatic and is a manifold that allows for the exploration and generation of knowledge in addition to the requisite representational function of diagrams.²⁵

The diagrammatic application of visuality is dependent on topological calibrations of directionality and alignment.²⁶ Krämer invokes Butades' allegorical shadow tracing of Pliny on a wall as a primary step in diagrammatic cognition²⁷ identifying a step of visualization that requires media to actualize. One layer of the diagrammatic process is a multiplicitous string of visible tokens of ideation. This string of tokens is one side of a diagrammatic dialog within processes of reasoning and conceptualization.

Ultimately asserting that diagrams, and therefore, cognition reveals itself on paper, Krämer's assertions open up a relation to the externalization introduced in Tylén's article on diagrammatic reasoning. Diagrams as packets of information externalized through graphically visualized artifact recordings of virtual conceptualizations developed within various sorts of thought processes are indispensable components of design activity. What would we do without this capacity to scrape, scribble, scratch, and sketch our way into design concepts and resolutions? Making our thoughts visual through messy draft iterations while engaged in conversations with ourselves is a

data storage strategy that frees up cognitive space so that we can move a concept forward within an organized trajectory.

Diagrammatically, a surface intended for inscription is a site of cognition. Krämer states, "We constantly represent the fullness of the real world and the phantasms of fictional worlds on flat surfaces such as drawings, figures, schemata and descriptions. So self-evident is the existence of inscribed surfaces to us that we barely realize what a special form of spatiality they embody. The technique of "flattening out"—of making the three dimensional two-dimensional—is a major principle of modern technology..."²⁸ This concept of "flattening out" is a conductive factor in diagrammatic method due to its ability to transplant spatiality from one mode to another. To flatten is to site the place on which a diagram can occur.

Krämer defines four separate categories of spatiality and their functions engaged in a diagrammatic process. Planarity immediately excludes one axis of three-dimensionality, and in so doing opens up an "artificial two-dimensionality [and] a small terrain is produced that is mobile, manipulable by hand, and fully available to inspection by eye."²⁹ Orientation not only provides the diagrammer with a means of organizing the elements of ideation towards visuality but is also used to organize the eventual communication of these elements through various representational methods. Time's inescapable requirements of succession and sequence are collapsed into a concurrent condition. Finally, she initiates what ultimately becomes the "cartographic impulse" with the relationship between "structural-space" and "movement-space."³⁰ In a diagrammatic act, this relationship is quite important as it is a point of participatory activity between the diagrammer and the diagram. The diagrammer is cognitively projected into the structural-space to become an agent of the diagram, engage its malleability, and begin manipulation through the concept of movement-space. It is this interactivity that Krämer labels as cartographic impulse. Recognizing these elements of cognitive spatiality and their combined utilities as functional components of a diagrammatic process structures a framework for engagement of manipulable conceptualizations within a diagrammatic pedagogy, hopefully, resulting in novel ideation.

With a universe of media available to us, there is a point of materialization embedded within the act of making actual our virtual diagrammatic cognition. A pedagogy elementally founded in the diagram's figural and literal utilities would be required to consider this materialization not only with a primary function of visualization, but also with widely interpretable boundaries of mode, method, means, and material. In traditional diagrammatic display, visualization is provided as two-dimensional graphic form—lines, graphs, arrows, fields of varying colors and tones, metric notations, etc. organized across some plane.

In Krämer's studies of "graphism", she inserts meaning within the fundamental "line", providing it with empirical substance

and establishing it as a vehicle of cognitive matter. The line, for Krämer is a tool with “the potential for symbolic transfiguration, by which something still only thinkable comes into being in the perceptible.”³¹ Periods of critical architectural exploration have already established that the typical two-dimensional visualization of diagrammatic communication is often times spatially insufficient and has expanded the notion of diagrammatic materialization three-dimensionally, often times with the added temporal dimension as well, in either physical manifestations or digital.

Krämer refers to line as “inscription” and the decisive point of cognitive opportunity when “trans-natural figuration and the potential for unprecedented conceptualization” intersect.³² A diagrammatic pedagogy extends line to refer to any sort of concept recording method, be it through traditional media or through new technology in any dimensional combination. The line—or perhaps the medium of inscription, whatever it may be—has the potential to represent something other than itself; while it has the capacity of mimetic representation in an explanatory mode, it also is empowered to materialize the yet-to-exist imagined subject. As Krämer puts it, this is the “imaginative design character of the line.”³³

For a diagrammatic pedagogy in architecture, the idea of Krämer’s line and its embedded meaning is extended as the various graphic media and methods externalized to record our ideations. These media and methods would be expanded outside of the fundamental two-dimensional graphic line – the scratch in the sand, the graphite scrape or the ink trail across paper, the line in the graph – to include the tools we have at our disposal in exploring the real spatial, formal, temporal, etc. implications unique to architecture; these implications being understood as the phenomenological spatial and temporal experiences that exist through architecture. While these toolsets have included traditional methods, media, and techniques of normative two-dimensional representations within the educational scope, the expansion mentioned would involve physical three-dimensional objects in both analog and digital form; established technologies – both recent and currently under development – that are directly applicable to architectural pedagogy and practice, as well as technologies that are not immediately recognizable as architecturally beneficial.

CONCLUSION

The intents of exploring a diagrammatic pedagogy is to propose a focus on the possibility of a legitimate definition for an architecture that exists in process in order to initiate within students a reduction of proximity as a factor in the relationship between architect and architecture. Externalization, exposure of abstraction, and allowance of manipulation are utilities that serve as tools of agency in diagrammatic practices. The space between architect and product can be conceptually reduced through the process of ushering the virtual through procedures of visualization supported by concepts of spatiality towards

ultimate idea materialization. These foundational concepts describe what designers are doing when we engage the diagram as part of a process. Methods of diagramming should be understood in much the same way as comprehension of methods through overall architectural operation. There is not one mode of diagrammatic process, nor should there be. Rather, there are elementary framework concepts intended for creative application. One may ask how these very elementary fundamentals can be stretched, abstracted, re-conceptualized, and expanded to inform novel insights within the development of a diagrammatic pedagogy.

ENDNOTES

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29. Krämer, “Trace, Writing, Diagram”, 6.
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31. *Ibid.*
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33. *Ibid.*
34. *Ibid.*