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Reconsidering the Ethics of Transparency

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Architecture's vast scope, as both an individual and a societal art, necessitates that any paper pondering its ethics take a broad view. The wide-ranging nature of architectural expression means nearly any principled stance is possible, and this diversity is being played out by the multiplicity of ethics engendered by digital design and fabrication. Such ethics can be rooted in environmental concerns like construction waste reduction, green materials and energy efficiency, or in politics as was the case with Daniel Libeskind's denouncement of architects working in Beijing, Thom Mayne's more moderate view that commissions are "complicated", or Robert A.M. Stern's shrugging response that he was an architect, not a politician.¹ However, what often goes unexpressed by these stances is a position grounded from within design, proper. Our lack of inherent ethic is understandable since design-based ethics were run aground during the post-modern deconstruction of 'truth' in architecture. This paper acknowledges the real effects of these circumstances, but it also contemplates the continued possibility of an ethic that stems from within design. Principles rooted within design need not be so cynical as Peter Eisenman was when he said, "The more centralized the power, the less compromises need to be made in architecture."² Instead this paper looks back at the belief in transparent expression as an architectural ethic, and asks whether such a design-based principle went awry not because it was 'wrong' but because architects were focused on the objects of their creation rather than their creative processes; on what got transparently rendered, rather how their processes could be made transparent. The digital revolution in architecture suggests that a

transparent process may be the most profound ethic that can emerge from within design.

What is architectural transparency? Along side its sibling concepts of truth and honesty, transparency has long stood as the backbone of an architectural ethic. Decorum, one of Vitruvius' six fundamental principles for architecture, is a form of transparency, one rooted in conventionalized cultural codes for materials and compositional forms.³ Decorum has also been considered a form of ethics: an expression of the necessary 'politeness' demanded of a building in order to justify its occupation of public space.⁴ However, the current understanding of transparency is rather more grounded in the nineteenth century quest for an honest architecture than it is in Vitruvius and ideas about decorum. When one speaks of transparency in architecture today, what is generally meant is an honest and truthful expression of some aspect inherent to the building. While much of the early nineteenth century worked through a series of historic revivals (Greek, Roman, Gothic, et cetera), around the middle of the century this derivational aesthetic became more and more unsatisfactory. Replacing it was the quest for a style uniquely expressive of the nineteenth century, one that spoke about the contemporary moment rather than cloaking itself in the expression of preceding periods.⁵ This new architecture was to be a transparent expression reflective of its time. It would display what Arthur Danto might call a very strong sense of 'truth correspondence' between what the building was and what it presented itself to be.⁶ John Ruskin was, perhaps, one of the most eloquent sources of this drive for honest expression

as evidenced by his thunderous condemnation of deception in his *The Seven Lamp's of Architecture*. After establishing that dishonesty in architecture is more heinous than it is in the other arts, Ruskin ended by writing:

We may not be able to command good, or beautiful, or inventive architecture; but we can command an honest architecture. The meagerness of poverty may be pardoned, the sternness of utility respected; but what is there but scorn for the meanness of deception?⁷

According to Ruskin an honest architecture did not dissemble, it expressed precisely what it was. Such a transparent approach would lead a modest building to appear modest, and a humble building to appear meager. While such expressions may still have been seen as aesthetically flawed, in the face of transparency all such flaws were pardonable; dishonesty, on the other hand, was not.⁸

This belief in transparency as a transcendent, redemptive aesthetic defined much of the architecture of the late-nineteenth and first-half of the twentieth centuries. No matter the flavor of architectural expression, so long as it was honest, so long as the building could be understood as a transparent medium, the design was ethically, if not quite aesthetically, redeemed. However, from the mid-1960's onward theorists like Robert Venturi, Peter Eisenman and Jacques Derrida (among others) increasingly undermined architecture's basis in a transparent and honest expression. Venturi argued that rationalist tendencies which simplified expression were out of step with the "complexity and contradiction" of contemporary culture.⁹ While there may have been a longing for simplicity, such theorists posited, any simplified expression could not continue to be seen as a transparent or honest rendering of our culture or our buildings. In their La Villette project documented in *Chora L Works*, Derrida and Eisenman extended this failure of truth, bringing it to a crisis. This project brought together both designer and interpreter for the creation of a unified work. Of their efforts Derrida wrote that the project "always causes something else to be said—allegorically—than that which is said....[In sum, it] causes one to lie. The truth of this work lies in its lying strength."¹⁰ By exposing the difficulty, the inevitable falsehoods and impossibility of transparency involved in the La Villette project, Derrida and Eisenman helped to undermine the transparency that had under girded

architectural expression throughout the previous hundred years.

Since this Post-modern deconstruction, architecture has been operating without an ethic internal to its own processes. In part, it is this missing internal ethic that makes the search for an ethic for digital design and fabrication seem so extremely open-ended. Faced with a blank sheet, other cultural, rather than disciplinary, sources have been tapped as a basis for an architectural ethic. Since architecture is a cultural art above all, each of these expressions of cultural morality are as valid as they are varied, but what they all lack is the mooring provided by an ethic rooted in design itself. Can the search for an ethic of digital design and fabrication lead to such an ethic? Did the failure demonstrated by Eisenman, Derrida and the other Post-modernists completely erase transparency's validity or might there be something still for a digital design to recover?

A closer look at Derrida's critique is helpful in providing an answer. What is interesting about his interpretation is that embedded within the project's message of truth's impossibility is an assumption that architecture is actually capable of carrying this message. In other words, underneath the "lies" the La Villette project expressed was an acknowledgement of architecture's power to effectively hold such contradictory meanings. So even when the inevitability of lying was the object, the purpose and success of the work depended on architecture's ability to transparently and honestly express such societal or disciplinary paradoxes. In short, it was not architecture's transparency that failed. In fact, the project proved that architecture was capable of all the contradictions of present/presence and past/absence the post-modern period wanted. In a sense Eisenman's work argued that Venturi's complexity and contradiction could be found in architecture without recourse to historicism or pastiche. Less an undermining of architecture's transparency, what the project really worked against was the idea of a stable interpretation, of a single explanatory truth to the exclusion of others. What it highlighted was the opacity that lay between design and interpretation, between preconception and reception. In short, Eisenman and Derrida's project was a critique of the transparency of representational systems, of an architecture that sought to control and instrumentalize meaning, of a narrowly defined relationship between signifier and signified, but the project

was also a celebration of the object's ability, and in this case the architectural object's ability, to encode more than can ever be made sense of at once.

While such a critique cannot help but be grounded in linguistic theory, its terms are also firmly rooted within design. They emerge from architecture's own representational system: drawing. For it is the assumptions made about drawing, assumptions that Robin Evans named "architecture's enabling fiction," which allows the architect to design, separating the prefiguring moment from the building's realization.¹¹ It is the belief that the image created by drawing is a transparent, stable representation of the building, that such drawings can capture the building's essence, which enables someone who does not build to visualize the building. Likewise the acceptance of drawing's transparency allows a finished building to be documented through drawing, to be captured and re-presented in a mobile and transmissible format. This later process allows the dissemination of the architect's style and fame. Together the doubled movement from drawing to building and back again forms an axis of projective transparency that makes the graphic description of architecture possible. And yet, if pressed everyone will admit that it is not actually the drawings that are transparent. Drawing's technical nature, its difficulty, makes it impossible to see a plan as the same as a building. And yet, by using plan, section and elevation together as a system of representation, an image of the building is formed, an imagined building, an ideal to match and be transparent to the material reality of the building. This is the fiction of transparency that underlies the discipline, and I would argue, supports all the other forms of transparency in architecture. For as the architect can project an idea on to the drawing board and from there to the builders and into the building, so too can architecture transmit the ideas it encodes back to the world. It is, then, this belief in architecture as a medium of expression, a medium capable of transparency that enabled the nineteenth century to look for an architecture that could encode its own moment, which could, without deception, present that moment as a definable aesthetic, as a style. The nineteenth century quest for architectural honesty was really a quest for self-expression, one made possible by the belief in the axis of transparency that drawing creates for the discipline.

However not all of aspects of the nineteenth century were so amenable to drawing's transparency. The period's investment with process mounted a particular challenge.¹² For, while drawing itself is a process, it is one that tends to diminish or disguise its own role as process in favor of a visual or formal correspondence between it and the object it represents. Patrick Maynard summarizes this phenomenon when he writes of Plato's description from *Menon* on the method for doubling the area of a square. In the resulting figure, Maynard notes, "the drawn shapes we see may have been understood in terms of operations...[but these operations are] not visible in the product."¹³ Although the process of drawing encodes one form of knowledge (procedural), this knowledge is only present during the active stage of process.¹⁴ Once complete, the drawing becomes an object that is, paradoxically, both an absolute document of its process of formation and nearly opaque in what it communicates about that process.

So, while it is possible to hear the call for an architectural reorientation towards process, fairly early on in the quest for an honest architecture, such calls tend to stay on the abstract rather than concrete level. For example, here, Viollet-le-duc tells architects how to approach the honest design of an object:

Naval architects and mechanical engineers do not, when they make a ship or a locomotive, seek to recall the forms of a sailing ship of Louis XIV's time or those of a stage coach...they obey blindly the new principles given to them, and produce works which possess their own character and their own style.¹⁵

To change the character of architecture, Viollet-le-Duc argues, to make it more honest, only required that the architect change how design was approached. If the building was to function like a machine, then the architect should behave as the mechanical engineer; if the building was to speak, then the architect should act as the poet; if the building was to grow, then the architect should manipulate the laws of its development. What each of these arguments assumes is that by focusing on process, the desired changes in the object will be made manifest, that it will somehow carry the mark of this more honest approach to the task.

Choisy also suggested that it was process that governed style. In *Histoire de l'Architecture* he wrote, "Style does not change according to the caprice of more or less arbitrary fashion, its variations

are nothing but those of processes.”¹⁶ As Reyner Banham summarized, Choisy viewed “form as the logical consequence of Technique.”¹⁷ Although both Viollet-le-Duc and Choisy suggest that process is key to reorienting architecture, following their suggestions was a monumental task, made monumental precisely because of the kinds of transparency drawing allows and the kinds it does not. In effect, like the architect, architectural drawings are object-centric rather than process-centric. As a result, even as architects may have begun to question their own process, when they turned to examine drawing, they were inevitably re-directed onto the objects of architecture rather than their own processes of design. For architecture to truly absorb the spirit of what Viollet-le-Duc and Choisy were calling for, for architecture to really become process-focused, it would take a different methodology for design, and this new method has been manifested by the digital revolution in architecture.

Computationally-driven design is not object-focused in the same way that drawing is. A drawing of a plan communicates a single expression of form. A program, on the other hand, describes a process through which a range of potential forms is obtained. This process is controlled through the definition of operations, variables, and relationships, such that, while a plan merely provides information about a product, code provides the means of production itself. By definition, code is a record of procedure: computational logic exposes how the program works. But more than this, well-crafted code includes comments, wherein the author explains the intention of each function in the software. In a way, to read these traces within the code is to read the programmer’s thoughts. As such, code is not merely a collection of processes; it describes a particular method of constructing said processes. Therefore, more than drawing ever could, it is coding which possesses the power to reorient architecture toward process. In a sense, then, the adoption of coding in design could finally realize the shift in orientation called for by Viollet-le-Duc, Choisy and the other theorists of the time. Programming might be the logical and even penultimate expression of the process-based transparency desired during the nineteenth century.

In other fields, the acceptance of this kind procedural transparency has been a boon. It stands as the basis of science; scientific publications must provide

details about experimental protocol and data collected, so that conclusions can be verified through duplication. Such requirements not only ensure the quality of the work, but they allow others to learn from and build upon experiments. While competition abounds in science, without procedural transparency, our exploration of its various fields would be in a much more primitive state. The rapidly completed sequencing of human DNA is an excellent illustration of the power of procedural transparency.

These ideas also lay at the heart of the open source movement, a software development philosophy that promotes transparent sharing of software code rather than “black boxing”. The idea of open source is closely related to the method of scientific review, wherein *procedural information* is equally (if not more) important than the results. Similarly, the publication of source code is essential to the development of computational design. Like scientists, designers have a need to study and learn from procedural information. Moreover, one of the tenets of software development is not to “reinvent the wheel”; in other words, to reuse relevant code as often as possible. By making code available through open source, designers can avoid redundant work and quickly advance the state of the art.

And yet, for architecture such transparency presents a dilemma. It raises questions about architecture’s current degree of procedural transparency and whether such institutional definitions are ethical. Namely, computational design requires the field to ask: what kind of access will architects have to one another’s code? Programs contain a great deal of proprietary information that is typically closely guarded. There is good reason to believe sharing such information is much more professionally risky than sharing a building plan. Because it is not possible to understand any significant body of code as a block of text, to be truly transparent code must be available in its executable form. Code must be run in order to be understood. Unlike a drawing, in this form, the ideas and processes embedded in the code may be readily modified or reused by anyone. This radical transparency renders ideas vulnerable in a way that drawn plans do not. Thus, code is potentially riskier to disseminate. It threatens the definition of authorship still in place within, and in many ways still at the heart of, the architectural discipline. Computational designers who publish their code risk competition or even theft, so it

makes sense that architects might resist the very transparency their new medium allows.

Some reactions have already emerged in the face of computation's radical procedural transparency. One has been to create programs that are functional yet not transparent. In computer science, this is known as obfuscated code. Obfuscation is when –intentionally or unintentionally—programs are constructed in such a way that one cannot easily determine how they work. For example, a programmer might use variable names that are not descriptive of their function or use non-standardized formatting that makes the code difficult to read. Programmers may choose to do this as a precaution against reverse engineering, but by restricting access to code, they undermine the transparency their medium has finally given to process.

However, there is another and more common blockage to procedural transparency. Most people, and most designers, are not computationally literate. In their case, code does not have to be obfuscated to be unusable. The complexity of computation and its languages prevents our easy access to its transparency. In the end, this problem is one of usability. Traditional architecture offers some insight into this problem. In Lewis Mumford's 1934 tome, *Technics and Civilization*, he writes that in coping with machines, "a simplification of the externals of the mechanical world is almost a prerequisite for dealing with its internal complications."¹⁸ In his analysis of Mumford, John Harwood sees this statement as a gesture toward human-centered usability.

In order to effectively manage the complexity of the mechanical environment and thus organically integrate themselves with machines, human beings must first *cover over* that complexity with a layer of representations that will mediate the dynamic exchanges between them and machines. This process of covering over and mediation, as much a matter of language as it is of space or environment, is precisely the act of design in a specific mode that would eventually become known as ergonomics.¹⁹

According to Harwood, what Mumford advocates is a mediating layer. In order to be useable machines must have their processes mediated. The same is true of computers and even of the programs from which computers derive their functionality, if people are to effectively cope with them, their full complexity cannot be made transparent. One way this difficulty has already been addressed

is through the development of application programming interfaces or API's. An API is a layer of abstraction that gives users access to higher-level functions of a program's code.²⁰ Source code is too low-level to be used effectively causing users to become overwhelmed by the complexity of detail. They cannot make sense out of it. So even when a method is developed in which procedural transparency is possible, even when the focus is placed on process rather than the object, it would seem that a complete procedural transparency is not ethical, or it is at least generally unusable (and procedurally-speaking there is no difference.)

So where does that leave architecture's search for an inherent ethic? Here again, I think it is wise to look to history, to remember the essence of the Postmodern critique of transparency, and to be mindful of the way that computational transparency is structurally different than drawing's. Computation has offered architecture a new means of design, one that aligns with a process-based episteme, but the inherent complexity of contemporary buildings still makes absolute transparency elusive. Such problems are not easily solved, for embedded in them are both sides of the transparency dilemma. On the one hand, design wants to be transparent. As a means of expression it desires honesty and the reflection of human conditions in all of their complexity. And yet, on the other hand, this same complexity undermines the possibility of expression *tout court*. Buildings, much less the human condition, are so intricate and complex they cannot be understood as totalities. They can only be grasped piece-meal through the use of mediating lenses. There is both a complexity beyond the capabilities of a single sense-making lens or single interpretive interface, and yet to grasp this complexity we need such lenses.

Hopefully, this paper has demonstrated the extent to which these struggles are the same ones that originally emerged in the nineteenth century. Today's architects may structure their designs, for example, in concert with the manufacturing processes that will be used in the building's realization (e.g. milling parameters). They may thus reify one form of transparency, the one between design and manufacturing. And yet, unlike the similarly abstracting narratives of the late nineteenth and early twentieth centuries, the radical transparency of code means that the power of such instrumen-

talizing lenses cannot be made invisible. The mediating interface cannot silently become the whole of architecture's meaning. Computation's particular form of transparency forces such interventions to remain visible. By conceptualizing architecture as process, by embracing what is unique about code as a form of procedural transparency, we can be fully honest about the roles that such abstracting layers play in that process. In this way we may finally realize the aspirations of theorists like Viollet-le-Duc and Choisy. Thus, by addressing how we *interface* with process, designers could recover the ethical promise of architecture's transparency.

ENDNOTES

1. Robin Pogrebin, "I'm the Designer. My Client's the Autocrat," *The New York Times*, June 22 2008.
2. Ibid.
3. "In Book One, ch.2 of *De architectura* (vol.1, pp.24-29), he established the concept of suitability (*decor*) as one of the six fundamental principles of architecture, along with order (*ordinatione*), arrangement (*dispositione*), proportion (*eurythmia*), symmetry (*symmetria*), and distribution (*oeconomia*). For Vitruvius, *decor* was determined by three contexts: convention (*statu*), as in the appropriate dedication of a temple; usage (*consuetudine*), as in what experience has taught regarding the appropriateness of the parts of a building in relation to one another; and nature (*natura*), as in the fitting relationship of the site to the building." Peter Kohane and Michael Hill, "The Eclipse of a Commonplace Idea: Decorum in Architectural Theory," *Architectural Research Quarterly* 5, no. 1 (2001): 66.
4. "According to Garbett, politeness was required to redeem a building's basic selfishness: '[a building] encumbers a portion of the earth's surface, and encloses a portion of the free atmosphere. It has no right to do so, without making or attempting what compensation it may for these injuries.' Rudeness may reside in a building, but it ultimately belonged to the client, that person so greedy or selfish as to give no care to public incommmodity." Garbett, E. L. (1850). *Rudimentary Treatise on the Principles of Design in Architecture*, London. Quoted in Ibid.: 72.
5 Peter Collins, *Changing Ideals of Modern Architecture 1750-1950*, 2nd ed. (Montreal: McGill-Queen's University Press, 1998), 146.
6. Steven Fleming, "The End of Architecture?," *Architectural Theory Review* 12, no. 2 (2007): 206.
7. Collins, *Changing Ideals of Modern Architecture 1750-1950*, 107.
8. This formulation may be seen as a counter to those like Ralph Waldo Emerson's essay, *Art* (1841) criticizing American architecture for the selfish and even cruel aspect which belonged to its great mechanical works.
- Kohane and Hill, "The Eclipse of a Commonplace Idea: Decorum in Architectural Theory," 72.
9. My reference here is to his pivotal book: Robert Venturi, *Complexity and Contradiction in Architecture*, second ed. (New York: Museum of Modern Art, 1977).
10. Quoted in Adrian Forty, *Words and Buildings: A Vocabulary of Modern Architecture* (New York: Thames & Hudson, 2000), 292.
11. Robin Evans, *Translations from Drawing to Building and Other Essays*. (Cambridge, Massachusetts: MIT Press, 1997), 154.
12. An investment in issues of process typifies much of the nineteenth centuries intellectual trends. Such ideas percolated through nearly every kind of nineteenth century history and science, often shaping and suggesting methods for the new disciplines. In each of these emerging fields, discoveries of formal pattern and organization were cited as evidence of process. For example Buffon's *Histoire Naturelle* (1749) posited the idea through the examination of living forms one could visualize the 'improvement' or 'degeneration' of species. Darwin's discovery of evolution was similarly a process inferred through formal study, but it was not only the natural sciences where such an emphasis on pattern could be found. The discipline of comparative philology, traceable to the late eighteenth century (re)discovery of Sanskrit, similarly led to a quest or the universal, pan-linguistic structures that could describe a progressive lineage of language. In all of these studies, form was not seen as an end in itself, it was not just the shapes of plants or animals or languages that were interesting, but the patterns and trends these shapes formed in relation to one another. To use Goethe's words, these systemic patterns were thought to reveal the 'pure phenomena' behind their forms. Another name for these 'pure phenomena' is process. My reference here is to Goethe's definition of morphology and *Urphänomene* as a formal principle which allows categorization and ordering. Joan Steigerwald, "Goethe's Morphology: *Urphänomene* and Aesthetic Appraisal," *Journal of the History of Biology* 35, no. 2 (2002).
13. Patrick Maynard, *Drawing Distinctions: The Varieties of Graphic Expression* (Ithaca, New York: Cornell University Press, 2005), 12.
14. Mario Capro has written eloquently about the struggle between earlier, text-driven understandings of drawing as process and the later Renaissance understandings of the shape focused image. Mario Carpo, "How Do You Imitate a Building That You Have Never Seen? Printed Images, Ancient Models, and Handmade Drawings in Renaissance Architectural Theory," *Zeitschrift Kunstgeschichte* 64 (2001).
15. Viollet-le-Duc, *Entretiens sur l'Architecture*, 1863 qtd in Collins, *Changing Ideals of Modern Architecture 1750-1950*, 162.
16. Auguste Choisy, *Histoire de l'Architecture* quoted in Reyner Banham, *Theory and Design in the First Machine Age* (London: The Architectural Press, 1960), 24.

17. Ibid., 23.

18. Lewis Mumford, *Technics and Civilization* (New York: Harcourt, Brace and Company, 1934), 357.

19. John Jeffrey Harwood, "The Redesign of Design: Multinational Corporations, Computers and Design Logic, 1945-1976" (Dissertation, Columbia University, 2006), XX.

20. From this description, there may be some confusion between API's and scripting languages. To be clear, a scripting language is also a higher-level abstraction of a program's functions, but scripting is for design of a building whereas the API we describe *is for the building itself*.