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Architecture after Drafting

Sean Keller

1.

In English, when speaking about architecture, the nearly obsolete term »drafting« suggests the delineation and detailing of a project in measured hardline drawings – a project that is to some extent already designed, already defined. This is in contrast to the unruly, and unruly, »sketch« – which is, in fact, the architectural equivalent of a writerly »draft« – something preliminary, yet to be finalized. Nonetheless, as a graphic representation, even the most technical drafting involves projection toward a building, and necessarily a distancing both between architect and drawing, and between drawing and building. It is this projective distance that certain forms of computational modeling attempt to collapse.

Since the first speculations in the 1960s on the role of electronic computation in architecture, there has existed a fantasy (perhaps a nightmare) of the total computational model, one that would possess all of the geometric, material, thermodynamic, lighting, acoustic, legal, and economic data for a project and its context.¹ Over the past decades, and outside of the flamboyant formal experimentation of the architectural avant-garde, there has been steady, if unexpectedly slow, advancement toward the realization of this vision. Recently, under the label of Building Information Modeling (BIM), the total computational model has made new inroads in professional practice and in schools. Under the banner of efficiency, BIM claims to provide a base for a fully integrated building practice in which all differences between the motivations of client, builder, engineer, site planner, interior designer, and architect are smoothed over, or flattened out, by the use of a single, unified, and omniscient computational model.

While such »Integrated Practice« might help control project budgets and component specifications, it simultaneously threatens to remove all of the gaps, all of the projective distances that since the Renaissance have constituted architecture itself. For as a meaningful practice – not merely a utilitarian one – architecture

¹ For example, see Steven Anson Coons: *An Outline of the Requirements for a Computer-Aided Design System*, in: *Proceedings of the Spring Joint Computer Conference* (1963), pp. 299–304.

has always been created out of inefficiencies, and exaggerations – out of projections that are projective, that extend beyond existing norms.²

This disciplinary shift from drafting to computational modeling is the subject of an ambitious argument presented by Mario Carpo in his recent book *The Alphabet and the Algorithm*.³ Taking the long view, and using terminology borrowed from the mid-century American philosopher Nelson Goodman, Carpo proposes that, prior to the Renaissance, building was an »autographic« practice: meaning that each construction was handmade, variable, and unique. Though based on, and bounded by, underlying archetypes, premodern building operated without a notational system, without conventions of drawing. According to this argument, architecture, as a discipline in the modern sense, came into being with the rise of printing and with the theory of Leon Battista Alberti, who boldly asserted that the authorial authority of the architect resided not in buildings themselves but in the notational system of drawings. In this new practice – which Carpo, following Goodman, calls »allographic« – a building, if constructed, was theoretically obligated to be an exact realization of the architect's instructions as codified in drawing.

Carpo's claim is that recent computational tools are reversing this centuries-old paradigm, returning architecture to something like an autographic practice, which is reactivated by the possibilities of semi-automatic form generation, the infinite flexibility of parametric models, the speed of rapid prototyping, and the increasingly collective design process of Integrated Practise. No longer based on the fixed authority of drafting, contemporary architecture, in Carpo's view, becomes techno-gothic both methodologically and formally (see the recent tendency to merge structural expression and ornamental variability).

While there is much to agree with in this argument – and it is indispensable for replacing the usual technological positivism that surrounds discussions of computational architecture with a historical approach – it also raises questions – especially around the topics of projection, authorship, and type – that deserve further consideration. For, when Carpo describes contemporary architecture reverting to an autographic and pseudo-medieval mode of practice, this is, obviously, not literally the case.⁴ While the strength of Carpo's argument lies in its assertion of a broad parallel between medieval and contemporary practice, and in the insights that follow from this parallel (even if these concepts may come from early twentieth

² The dismal results of working through BIM, and without these distances from the »reality« of commercial building, can be seen more and more frequently in student work, in completed buildings, and in entire urban quarters where the BIM-based strategy of assembling catalogue-provided elements in rentlessly stacked floor-plates is glaringly evident.

³ Mario Carpo: *The Alphabet and the Algorithm*, Cambridge, MA 2011.

⁴ I leave aside here the further question of whether Carpo's characterization of medieval building culture itself is correct.

century art history, rather than medieval sources themselves), this leaves open the identification of what is unique in computational architecture. Which is only to make the somewhat trite point that, when it comes to history, reversing a reversal does not return us to the original condition (and certainly not after six or more centuries).

To be more precise, what Carpo asserts is that computational representation, by perfecting allographic notation, flips into its opposite: autographic representation.⁵ The idea here seems to be that when computational models become sufficiently dense, and when the translation from modeling to fabrication becomes sufficiently smooth, then the notational system effectively becomes transparent, returning the design process to the immediacy of an autographic state. This somewhat paradoxical claim was likely suggested to Carpo by a passage from Goodman in which he writes that:

»some composers of electronic music, with continuous sound-sources and means of activation, and with the human performer dispensable in favor of mechanical devices, seek to eliminate all latitude in performance and achieve »exact control. But [...] absolutely precise prescription cannot be accomplished by any notational system; differentiation requires gaps that destroy continuity. [...] For exact control, the symbol system would have to be both syntactically and semantically dense – an analog or graphic system [...]. But then, also, we have no notation or scores, and ironically the demand for absolute and inflexible control results in purely autographic works.«⁶

However, Goodman's point here is that this transformation is *not* possible – the two systems, allographic and autographic, are, in his view, distinct and no quantity of notation can transform the former into the later. So the lesson is not immediately the one that Carpo seems to take. Nor is it easy to clarify what the lesson for architecture should be. In the first place, Goodman may be, in one sense, wrong: he rejects the idea of total electronic control through an *ad absurdum* hypothesis of »some inaccuracy, however slight« when the meaningful limit clearly would be a *noticeable* inaccuracy.⁷ For example, aren't some digitally generated sounds and images effectively indistinguishable from their analog analogs? Yet, Goodman is right to emphasize the distinction between the autographic and the allographic when it comes to the production of works, since even if the results are indistinguishable, the two processes of generation remain entirely different. It would seem

⁵ Carpo: Alphabet and Algorithm (as note 3), p. 78.

⁶ Nelson Goodman: Languages of Art. An Approach to a Theory of Symbols, Indianapolis, IN 1976, pp. 190–191.

⁷ Ibid. p. 191.

that Carpo's claim that current computational tools are returning architecture to an autographic state could only be strictly correct in regard to a hypothetical virtual-reality design environment in which a digital representation provided all of the feedback of the parallel material experience, but that is obviously not what we have available at present, nor what Carpo seems to have in mind.

The contemporary practice Carpo points to is obviously not manual. A central tenet of the shift to computational design and fabrication is that it is (or in theory could be) carried out without handicraft in either representation or fabrication. Carpo surely knows this and is usefully drawing our attention to the fact that the combination of design software and computer-controlled fabrication devices (robotic machine tools, laser cutters, three-dimensional printers) allows for a newly fluid practice that is somewhat *like* handicraft, in the sense that the designer may shape a computer model and then automatically output a physical prototype or building component without the intermediate step of drafting.

But just as much rides on the differences between handicraft and computational practice. For the complex and highly variable contemporary environments of software and hardware introduce a distance – not a void, but perhaps a filter or membrane – between designer and object that is not captured by the model of handicraft. To be clear, I have here no interest in a phenomenological valuation of this difference, one way or the other. I only want to characterize it as accurately as possible. One potential danger of Carpo's parallel would be a romantic or utopian conception of both the autographic system of the middle ages and of its supposed reappearance today (or in the near future) – a conception that assumes that such representational systems are immediate, or unmediated, and therefore directly expressive.

It is within the membrane of programs and devices of representation and fabrication that the specificity of contemporary architectural practice is located. For, while Carpo suggests that computational practice collapses the projective gap between representation and object into a new immediacy of pseudo-medieval handicraft, it is more accurate to say that this gap is multiplied and relocated *within* the design process itself in the relationship of author(s) to object(s). It was the genius of Alberti's theory that it gave authority to the architect via drafting: by virtue of being virtual, by taking the place of the building that did not yet exist, a drawing could be authored by a single subject and fix a design as a representation. If today drafting has been replaced, if the authoritative drawing no longer exists, this does not mean that the architect is in more direct control of the building. In fact, it means the opposite: the authors (architects and many others) all work at a distance, indirectly shaping and reacting to a partially collective, and partially automatic, set of representations that may lead to a building.

One of the important, and novel, characteristics of contemporary architectural

mediation is that it holds the potential to be quasi-animate, or semi-automated. Through programming – that is through the scripting of logical and mathematical instructions – architectural forms can be modeled without direct delineation by the hand of a designer. While some practices have explored the feasibility of totalizing the design process through such an algorithmic approach – and while many more have ignored the possibility entirely and naively continue to use computers as digital drawing boards – there is a trend toward the partial incorporation of such auto-generative methods in combination with more traditional compositional techniques. Typically, some elements of a project – such as furniture, partitions, ceilings, or facades – are generated through algorithmic methods, while other aspects are designed »by hand«. On this theme, Carpo, through a sweeping combination of medievalist art history and post-structuralist theory, again suggests that contemporary practice returns to a pre-Renaissance mode:

»In ages of variable copies, the meaning of visual signs does not depend on sameness, but on similarity. This was the case in the West before the rise of print, and this is again the case now, in the vast and growing domain of variable digital media. [...] [Erwin Panofsky and Richard Krauthheimer] aptly describe the visual environment that is being shaped by contemporary digital media. Each objectile is an exactly transmissible but nonvisual notation: it is a fixed normative genus, which may engender infinitely variable visual species. [...] The objectile is to an object what a mathematical function (a script or notation) is to a family of curves, or the Aristotelian form is to an Aristotelian event: in Aristotelian terms, the objectile is a generic object. [...] But insofar as the objectile is, technically, an open-ended algorithm, and a generative, incomplete notation, the objectile's designer will »authorize« some general norms to determine aspects common to a range of variable and individual events. [...] Hence the objectile's designer is a »general«, or perhaps a »generic« author.«⁸

The architectural project that most fully epitomizes Carpo's theory of the objectile is Greg Lynn's Embryological House of 1998/99 (p. 124). In this example what Lynn designs is not a single building, or even a kit of parts, but a rule-bound process that is capable of producing thousands of distinct and varied individual houses. While not entirely reducible to a pure »mathematical function«, the process of the Embryological House comes very close to such complete algorithmic description. Formally, the project begins from nearly nothing: a two-dimensional ellipse defined by a closed spline curve with twelve control points. This initial curve is then put through a sequence of deformations, combinations, and geometric operations – mostly handled by computational scripts – to arrive at the distinct

⁸ Carpo: *Alphabet and Algorithm* (as note 3), pp. 46–48.

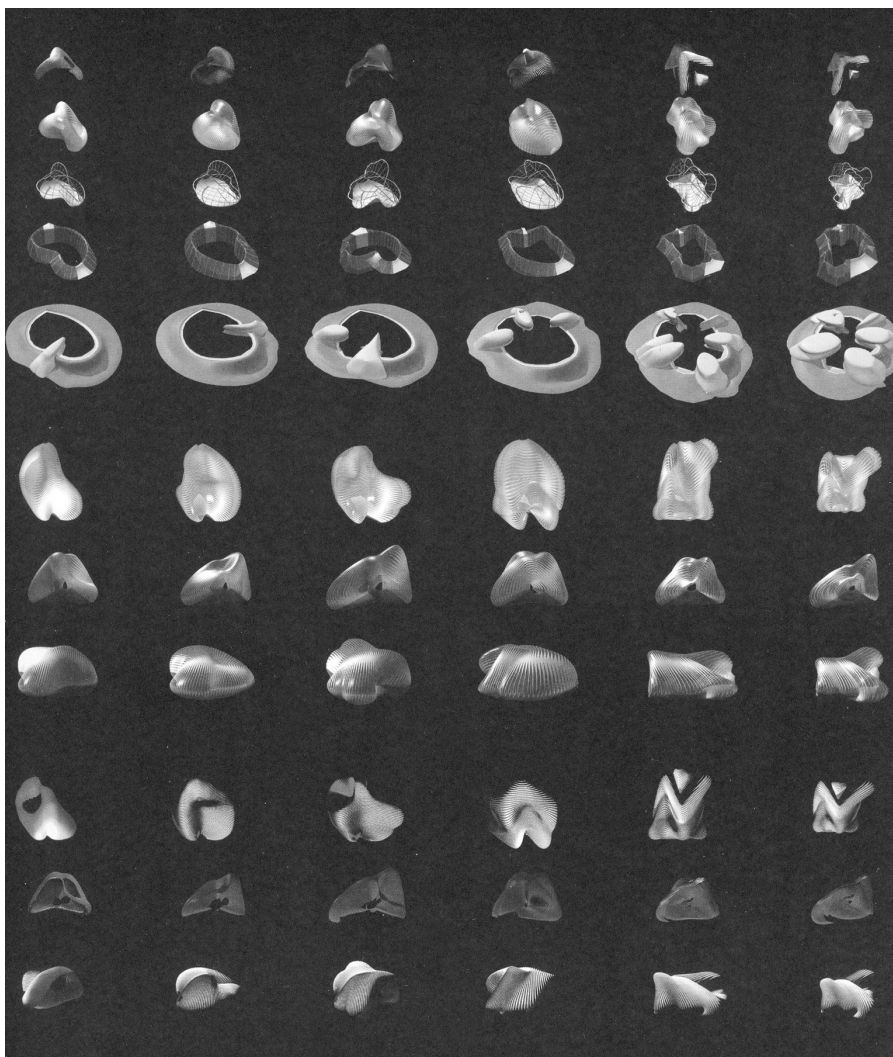


Fig. 1: Greg Lynn FORM: Embryological House, 1998/99.

form, structure, and landscape of each individual house. In Carpo's terminology, what Lynn has authored is a »normative genus« or »objectile« – that is to say a generic process, rather than the specific houses themselves. Interestingly, Lynn has said that he began the project after speaking with automotive designers about the problem of creating car models that are distinct yet recognizable as members of a brand family; and he has used a process similar to that of the Embryological House

for a set of »mass-customized« coffee and tea services for the manufacturer Alessi (although in this case »mass« is still rather elite: only ninety-nine of the services were produced).

Carpo's description of today's architect as the author of a normative genus, rather than of specific objects, requires several important refinements to fit our contemporary situation more accurately. Again, we should observe the important distinction between the medievalist precedent to which Carpo refers and that of today. If Panofsky and Krautheimer could identify a »fixed normative genus« underlying a family of disparate medieval objects, this genus was certainly not consciously authored at one historical moment, but rather arose collectively over time. This differs fundamentally from Carpo's description of contemporary designers who consciously design algorithmic »objectiles« that can generate a large number of varying objects. Similarly, the environments within which these projects emerge are almost entirely simulated, as are their »histories«. The non-identical similarities that Carpo describes are similarities *within* a single project, as that project generates multiple objects, not *between* differently authored projects, and both the similarities and variations are designed as such at one time, by a unified (even if collective) author. Here we have a parallel to the issue of projective distance described above: what in medieval artistry extended over a long period of time and across distant locations is in today's design process collapsed into the generation of a single project. Which is to say that the variation within a contemporary algorithmic project is the product of highly self-aware simulation, not the vagaries of shifting historical contexts.⁹

Carpo's description is also challenged by the fact that few, if any, realized projects have taken advantage of the design method he describes to actually instantiate multiple, varied, products of an algorithmic genus. This is especially true for architecture, which among all of the design fields remains stubbornly singular. In this sense Carpo's manifesto repeats modernism's repeated, and repeatedly failed, calls for mass produced buildings. Instead, what is emerging today is a design method in which the possible variations generated by a computational approach are explored, but only a single variation is, necessarily and quite consciously, chosen to be built. Or, a better description would be that the variations latent within the algorithmic objectile are pruned, honed, and tweaked in order to generate a single preferred

⁹ There is a closer contemporary parallel to the medieval type that Carpo describes: a similarity in different projects, in different places, by different architects, that arises because they are designed with the same software packages and engineered and constructed by the same firms. Though it gives the best evidence of truly collective authorship, one suspects that this sort of resemblance is too »generic« for Carpo, whose notion of collective authorship is perhaps still limited by an unacknowledged continuation of an Albertian understanding of the design process itself as a discrete event.

result, which may then be further adjusted in an *ad hoc* manner before being constructed. To take just one illustration: the O-14 tower in Dubai by Reiser + Umemoto is wrapped by an undulating white skin perforated by a field of circular openings of varying diameter. The pattern of these openings is determined both by purely visual desires and by structural demands that cause the openings to be organized roughly on a diagrid with subtly greater solidity at the base than at the top. While the pattern was explored via computational processes, the firm thought that its initial attempts to work purely by algorithm appeared »too mechanical« and the openings were ultimately adjusted »by hand« in order to achieve the desired level of irregularity.¹⁰

On the basis of the algorithmic work produced thus far, there is also reason to question, or at least refine, Carpo's assertion that this architecture relies on a non-visual conception of similarity like that found in Krautheimer's description of medieval copies. Although computational methods have introduced the possibility of endless variation of forms, in any one project these forms have, in fact, been quite recognizably – that is to say, visually – similar. Indeed in the paradigmatic examples by Lynn, he explicitly emphasizes his attempt to create forms that share a family resemblance, and his extensively theorized use of calculus-based forms means that the variability of the specific objects is a continuous one that ensures an obvious visual similarity among all of the products. This is quite different from the non-visual similarity of medieval forms described by Krautheimer, for example, who begins exactly with the problem of explaining how buildings that appear to our eyes to be almost entirely different could, for the middle ages, be understood as »copies« of the same archetype.¹¹ Rather than any



Fig. 2: Reiser + Umemoto: O-14 Tower, Dubai, 2006–11.

¹⁰ Jessie Reiser in telephone conversation with the author (18.05.2011). For more on this theme see Sean Keller: *Playing the Field. On Computational Architecture and Postwar Abstraction*, in: *Artforum* (Summer 2011), pp. 376–381.

¹¹ Richard Krautheimer: *Introduction to an 'Iconography of Mediaeval Architecture'*, in: *Journal of the Warburg and Courtauld Institutes* 5 (1942), pp. 1–33.

smooth range of variation, Krautheimer understands the medieval notion of similarity to be based on the discontinuous, incomplete, heterogeneous, and reconfigurable replication of certain key, non-visual, elements:

»It has been pointed out before that the [medieval] model is never imitated *in toto*. A selective transfer also of the architectural elements takes place. [...] Evidently the medieval beholder expected to find in a copy only some parts of the prototype but not by any means all of them. Another point will have become apparent in this connection. The parts which have been selected in these ›copies‹ stand in a relation to one another which in no way recalls their former association in the model. Their original coherence has been discarded. The original unity has been disintegrated and the elements have been reshuffled, as it were. [...] This procedure of breaking up the original into its single parts and of re-shuffling these, also makes it possible to enrich the copy by adding to it elements quite foreign to the original.«¹²

Indeed, if this medieval practice described by Krautheimer has any parallel in recent architecture, it would seem to be in the collage-based approach of Robert Venturi, which Lynn explicitly set out to supersede through an aesthetics of smoothness and continuous variation. By comparison, algorithmic architecture has so far produced differences that largely do not differ – projects in which homogeneous variation precludes radical differentiation.

2.

Having briefly touched on some of the issues raised by Carpo's provocative argument, I feel an obligation to at least begin to draw my observations together into an alternative interpretation of contemporary architectural practice. While Carpo is clearly right to say that drawing has been displaced from the center of the discipline, in my view, this does not lead to some unmediated pseudo-medieval condition, but rather one that is mediated in incredibly diverse, and ever-shifting, ways (among which is still, after all, drawing). Which is to say that contemporary architecture is, like the arts generally, now a post-medium practice and that ›post-medium‹ does not mean a lack of mediation, but a lack of stable and canonical mediums. As Rosalind Krauss has argued, even after the aesthetic implosion of essentializing medium-specificity (what could inelegantly be called ›Greenbergianism‹) critically-minded practice must still grapple with the limits of medium. However, these must now be understood to refer to what Krauss calls the ›layered,

¹² Ibid. pp. 13–14.

complex relationship that we would call a *recursive structure* – i. e. the historically constructed conditions of art itself, rather than any physically differentiated practice (painting, sculpture, film, video, etc.) within art.¹³ I suggest that if, through the displacement of drawing, architecture has belatedly also recognized its »post-medium condition«, the formulation of a critical contemporary practice would need to follow a similar path.

Having suggested that I want to think through the consequences of Krauss's argument for architecture, I must immediately reinforce both her hesitation in continuing to use the term »medium« and her ultimate persistence in doing so. Clearly the very concept of an architectural »medium« is not obvious, as Goodman's own remarks about architecture suggest: he notes that »the architect's papers are a curious mixture« and that, when it comes to the distinction between autographic and allographic practices, »architecture is a mixed and transitional case«.¹⁴ While for several centuries drawing did serve as the determining medium of architecture, it was nonetheless, as a notational system, never able to serve as a foundation in the sense demanded by theories of medium specificity. Carpo correctly argues that for the Albertian paradigm drawing is a »notational bottleneck« and that »in most cases what can be built is determined by what can be drawn«; but that does not imply the converse: that what can be drawn determines what can, or should, be built. Even within the conventions of orthographic projection, many things can be drawn that are not buildings. The foundations of architecture have therefore always had to be found elsewhere: in theories of tectonics, typology, function, or expression.

Yet, for a host of reasons related to creation, dissemination, and use, it would be even more inaccurate to say that material building – as either noun or verb – is the medium of architecture. In fact, we can say that architecture has always been a trans-, or post-, medium art, deploying an ever-expanding range of representational modes including many varieties of drawing, physical models, photography, film, video, texts, legal contracts, and ultimately buildings themselves. Still, while recognizing the complexity of architectural practice and the range of representational modes that deserve consideration, there has been for many centuries a »special relationship« to drawing. While the stability of drawing conventions may have partially disguised the complexity of architecture as a medium, the displacement of those conventions by computation leaves us with no choice but to confront this complexity. Computation, as the new, dominant, and highly disruptive addi-

¹³ Rosalind Krauss: »A Voyage on the North Sea«. *Art in the Age of the Post-Medium Condition*, London 2000, p. 6. Also see Rosalind Krauss: *Reinventing the Medium*, in: *Critical Inquiry* 25/2 (1999), pp. 289–305.

¹⁴ Nelson Goodman: *Languages of Art* (as in note 6), p. 218 and 221.

tion, now takes on the lead role formerly played by drawing and therefor requires special attention. I believe that this is consistent with Krauss's approach, which preserves a central, if modulated, role for the specificities of representational techniques as a source of artistic differentiation.

Beyond her general framing of post-medium practice, Krauss's analysis of specific artistic practices – especially her discussion of the work of William Kentridge – also offer important clues for contemporary architecture. Foremost among these is the concept of automatism. Describing Kentridge's working method, Krauss focuses on the important role of automatism within this process, particularly the »treadmill« he walks in his studio between his charcoal drawing palimpsests and his camera. As she, and Kentridge himself, point out, this automatism has two entangled aspects: while the process is »routinized« and »programmed«, this very automation leads Kentridge to »discoveries« that he could not have made intentionally. He calls the force behind these discoveries »*fortuna*«. As Krauss describes it: »Caught up within the quasi-automatism of the process, he is strangely enough left free to improvise and to do this in the grip of agencies he characterizes as ›something other than cold statistical chance, and something too, outside the range of rational control.«¹⁵

As Krauss goes on to point out, it was just this dilemma between »two equally impossible alternatives, either the absolute mechanization of chance (John Cage) or the utter submission to total organization (Ernst Krenik's [sic] electronic programming)« that led Stanley Cavell to his thinking about automatism and the modern dilemmas of artistic mediums.¹⁶ For Cavell, the genres, forms, and techniques of traditional arts provided forms, which Cavell terms automatisms, within which meaningful improvisation – what he calls »the taking and seizing of chance« – could occur. The essential problem of modernism is that these traditional forms have broken down, leaving only the meaninglessness of either absolute chance or absolute organization. Therefore the task of the artist who refuses to accede to these emptied out alternatives »is no longer to produce another instance of an art but a new medium within it.«¹⁷ That is to say, within the post-medium condition each artist must formulate his or her own automatism, within which meaningful expressive novelty can be found.

This description precisely parallels the stance of today's most thoughtful users of computation in architectural design. Lynn, for instance, has said that his seminal Embryological House was motivated by the desire to use computers in a way

¹⁵ Rosalind Krauss: »The Rock«. William Kentridge's Drawings for Projection, in: October 92 (2000), p. 6.

¹⁶ Ibid. p. 11.

¹⁷ Stanley Cavell: The World Viewed. Enlarged Edition, Cambridge, MA 1979, p. 104.



Fig. 3: MOS: Afterparty, P.S. 1, New York, 2009.

shift, so that the use of computational methods is no longer an end in itself, as it has too often seemed to be, but becomes just one aspect of practices that use computation to explore new expressive terrain. MOS's project »Afterparty« at P.S. 1 in New York, for example, used computational form-finding to map a cluster of hyperbolic paraboloids, but was then materialized as an anachronistic future ruin resonate with themes of environmental and economic collapse. As Krauss suggests in her analysis of Kentridge, at such moments purely technical automatism leads to the sort of psychological discoveries arrived at by automatic writing – though these discoveries must also be, in Cavell's word, »seized« and developed alertly – absent minded doodling (or modeling) is not sufficient.

For contemporary architecture it is also significant that Krauss links the topic of automatism to the risk that animation poses for Kentridge's work – specifically the risk of what Sergei Eisenstein called »plasmaticness«. That is, the metamorphic ability in animation for anything to become anything else: for instance Mickey Mouse's gloved hands which can become two dancing figures with arms and legs of their own, and then easily return to being Mickey's hands (though for Eisen-

that was unpredictable but not completely arbitrary.¹⁸ Similarly, he has described the computer as a »pet« which is partially domesticated and partially wild.¹⁹ Or take *From Control to Design*, a collection of recent projects and essays, the title of which indicates the importance for younger architects of bending computational methods toward problems of meaning and affect that are beyond mere calculation.²⁰ The book's introductory essay, by Michael Meredith of MOS, describes a desire for a generational

¹⁸ Greg Lynn: Families, in: Mark Rappolt (ed.): Greg Lynn FORM, New York 2008, pp. 172–174.

¹⁹ Greg Lynn: Animate Form, New York 1999, pp. 19–20.

²⁰ Tomoko Sakamoto/Albert Ferré (ed.): From Control to Design. Parametric/Algorithmic Architecture, Barcelona 2008.

stein this was not a problem but a source of fascination).²¹ As Cavell also observes, in animation the laws of our reality – of gravity, of the conservation of mass, of mortality – do not hold. Because of similarities in the technical support of computational representation – the fact that any on-screen display is not static but animate, created out of the scanning of an electron gun; and more importantly the fact that the geometric model underlying the display is inherently transformable – computational architecture has encountered identical risks. After all, among the first polemically computational architectural projects in the 1990s were the »blobs« of Lynn and others, the »plasmaticness« of which was embraced and theorized by Lynn exactly through the term »animate«. Like their cel-based predecessors, these forms seemed to have the capability of becoming anything – though the static condition of architecture meant that capability could be only potential. Similarly, designed within the void of virtual space, the projects often contained no sense of gravity or of materiality.

Regarding Kentridge's work, the risk that Krauss, and Kentridge himself, see in this sort of protean representational system is a complete loss of aesthetic stakes, the loss of resistances from which meaning can emerge. Against which is set Kentridge's archaic studio method, the laboriousness of his »treadmill«, the stubborn traces of his charcoal marks – that is to say, his construction of a medium in Krauss's sense of the term. If in an age of computation architecture confronts parallel risks, where could parallel resistances be found? Given the multiplicity of the post-medium condition, the answer can only be that there are many potential sources and many configurations that such self-imposed restraints could take, though by definition these resistances will all be concerned with themes that computation itself does not easily accommodate: the body, scale, materiality, and history, among others.

Regarding this last, and returning to a major issue raised by Carpo's argument, I want to conclude by suggesting that, for contemporary architecture, typology becomes indispensable for the extension of Krauss's insights. If, as Krauss has it, critical post-medium practice must be both »differential and self-differing« this requires reflection on the historical conventions out of which the practice emerges; and for architecture these conventions are perhaps best conveyed by the notion of type, which offers the possibility of conventions that are historically grounded but also adaptable within new technical and social contexts. In parallel to Krauss's description of recent photographic practice, a concern with typology would inevitably confer a retrospective aspect to architecture, and, as in Krauss's assessment, I would argue that this would aid the differentiation of architecture from the homogenized field of a digitally-saturated culture.

²¹ Jay Leda (ed.): Eisenstein on Disney, Calcutta 1986.

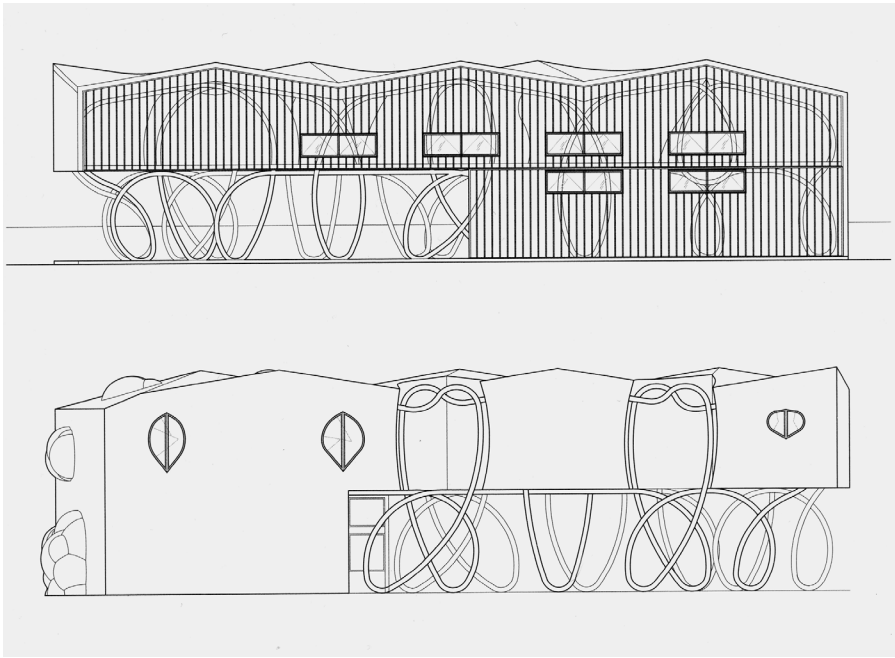


Fig. 4: Greg Lynn FORM: Slavin House, Venice, CA, 2005–10.

In this regard, the unbuilt and punningly named Slavin House, which Lynn designed for his own family, including his wife, the architectural historian and critic Sylvia Lavin, marks an important shift in contemporary practice. The complex curvilinearity of its support continues a drive toward computationally-based form-making – recalling his long-standing fascination with the continuously variable geometry of spline curves. Yet, given Lynn's prior work as a theorist of, and speculator in, computational form generation, what is most unexpected and significant about this house is the extent to which it looks something like a house – the extent to which it engages and distorts a recognizable historical type: Le Corbusier's *Maison Domino*. This is all the more surprising since Lynn's first publication, »Multiplicitous and Inorganic Bodies«, was an argument for thinking outside of the typological lineage represented by Le Corbusier's villas.²² When contrasted with the alien and hermetical detachment of his earlier *Embryological House* project, the incorporation of a known type (and arguably *the* type for domestic modernism) within the design process for the Slavin House, represents a crucial shift in Lynn's approach.

²² Greg Lynn: *Multiplicitous and Inorganic Bodies*, in: *Assemblage* 19 (1992), pp. 32–49.

Finally, it is useful to emphasize the difference between the possible role for typology in contemporary architecture displayed here and Carpo's notion of the architect designing generic objects or objectiles. Where Carpo's generic objects are individually authored, a type is historically and collectively received – and therefore meets Krauss's concept of medium as a »layered, complex relationship that we would call a recursive structure«. Thus, I would argue, it is in fact type and not the »generic object« that matches the idea of »normative genus« that Carpo takes from Panofsky and Krautheimer. Further, if for Carpo the generic object is now the defining center of architectural activity and identity, and if this is an architectural equivalent of Cavell's concept of automatism, then one indispensable way in which the generic object of computation can gain productive artistic friction is through an entanglement with a historical conception of type.

Image Sources:

Fig. 1: Mark Rappolt (ed.): Greg Lynn FORM. New York 2008, p. 285.

Fig. 2: <http://www.contemporist.com/2011/03/10/0-14-tower-by-reiser-umemoto>

Fig. 3: <http://pix.alaparte.net/pub/USA/New+York+NY/Museums/PS1>

Fig. 4: Mark Rappolt (ed.): Greg Lynn FORM. New York 2008, p. 105.