

Go Figure: Between Object and Field

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This paper presents a series of drawing experiments that explore parametric approaches to constructing objects and fields. The work employs procedural design techniques, computational workflows, and conventions of architectural representation to speculate on alternate approaches to authorship, agency, and autonomy in architecture. It builds upon several years of ongoing research into parametric and robotic drawing techniques that offer new models for melding computational and intuitive decision-making in the design process. The paper argues for a synthetic approach that embraces critiques of digital formalism without discarding computational workflows altogether. It suggests a synthetic approach that leverages computation to engage in systems that accommodate both fields and figures, both contingency within relational networks and formal autonomy of the discrete object. Works from the drawing series are used to discuss questions of process, authorship, form, part-whole relationship, and visual effect in the construction of architectural form.

Computational and algorithmic practices now permeate nearly every aspect of contemporary life, from shopping and finance to manufacturing and healthcare. Technologies such as machine learning and artificial intelligence bring promises of greater efficiency, precision, customization, and productivity, but they also challenge established norms and assumptions regarding human authorship, agency, and autonomy.¹ Within the discipline of architecture, this disruption manifests in debates over the role of the computer in making design decisions: if and how humans should cede control to automated processes. For the past twenty years, architects have argued over the degree to which machine-based algorithms can and should influence the production of architectural form. Does computation open up new avenues for formal invention and discovery? Or does it inhibit, threaten, and perhaps displace the designer's intuitive capacities?

The answer to both of these questions is, of course, *yes*. This paper presents a series of drawing experiments that explore the capacity for parametric processes to negotiate this complex landscape of design agency in the computational era. This work, part of a broader pedagogical and design research exploration of alternative approaches to design computation,² demonstrates simple parametric techniques for melding computational and intuitive decision-making in the production of two-dimensional form. The drawings suggest one way architects might integrate algorithmic and

computational processes into a design workflow that preserves the intuitive role of the designer.

The work operates across and between two aesthetic and theoretical discourses that have marked architecture's computational turn: the field-driven project that is perhaps best articulated in Stan Allen's essay "From Object to Field," and the more recent engagement with philosophies of Speculative Realism and Object Oriented Ontology (OOO) advocated by architects such as Tom Wiscombe, David Ruy, Mark Foster Gage, and Michael Young. The project acknowledges the OOO critique that, two decades in, the so-called "digital project" has reached a point of formal exhaustion, perhaps most evident in the stylistic tropes of Patrik Schumacher's "Parametricism": continuous differentiation and endlessly variable fields that we now often associate directly with computational processes. But the work also is suspicious of the sometimes reactionary impulse that underlies much of the OOO work, its tendency to perhaps too quickly reject notions of relational fields and context in favor of the ideological purity of object-buildings.

This paper argues for a synthetic approach that embraces the OOO critique of digital formalism without discarding computational workflows altogether. It suggests one way to leverage computation to engage in systems that accommodate both fields and figures, both contingency within relational networks and formal autonomy of the discrete object.

FIELDS

In his 1997 essay "From Object to Field," Stan Allen argues for a relational understanding of architectural form: one that embraces multiplicity of parts, and that celebrates the emergence of new formal behaviors from this multiplicity. Allen defines a field condition as follows:

We might suggest that a field condition would be any formal or spatial matrix capable of unifying diverse elements while respecting the identity of each. Field configurations are loosely bounded aggregates characterized by porosity and local interconnectivity. The internal regulations of the parts are decisive; overall shape and extent are highly fluid. Field conditions are bottom-up phenomena: defined not by overarching geometrical schemas but by intricate local connections. Form matters, but not so much the forms of things as the forms between things.³

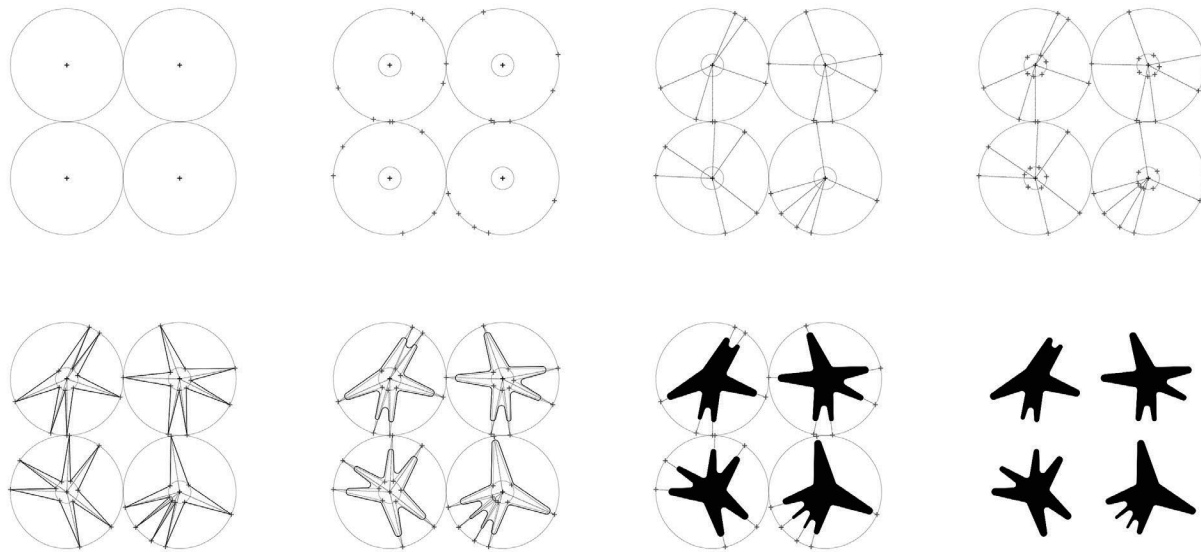


Figure 1: Process algorithm, *Figures* series.

In this text, Allen draws on examples from Minimalist and Post-Minimalist art to articulate a formal agenda predicated on “the forms between things” and, in particular, “the displacement of control to a series of intricate local rules for combination.”⁴ This represents an *algorithmic* understanding of form, in which the whole is resultant from local conditions and rule sets.

“From Object to Field” was written in the early years of the so-called digital turn in architecture, in which architects began employing computational processes to explore new approaches to form, space, and material logics. In much of this work, we can see an alignment of the algorithmic sensibility advocated by Allen and an aesthetic/tectonic condition of differentiated parts, a quality that Greg Lynn via Gilles Deleuze and Félix Guattari has referred to as “continuous variation.”⁵ The field condition—assemblies of similar but slightly different elements that vary subtly from one to the next—became a defining hallmark of much of the experimental computational work of the late 1990s and early 2000s.

Indeed, the prevalence of the field—and its association with computational processes—is now so endemic that there are those who embrace what Patrik Schumacher of Zaha Hadid Architects has termed “Parametricism”: a stylistic marriage of algorithmic thinking with an aesthetic of continuous variation.⁶ Schumacher claims a direct contingency between parametric processes and aesthetic outcome, in which computational technologies dictate an architecture predicated on continuity, flows, fields, and the like:

Parametricism differentiates fields. Fields are full, as if filled with a fluid medium. We might think of liquids in motion, structured by radiating waves, laminal flows, and spiraling eddies. Swarms have also served as paradigmatic analogues for the field-concept... There are no platonic, discrete figures with sharp outlines. Within fields only the global and regional field qualities matter: biases, drifts, gradients, and perhaps even conspicuous singularities like radiating centres. Deformation does no longer spell the breakdown of order but the lawful inscription of information. Orientation in a complex, lawfully differentiated field affords navigation along vectors of transformation.⁷

If Allen uses the aesthetic condition of the field to methodically work through questions of repetition, variation, and authorship in the design process, Schumacher employs it in a much more doctrinaire manner to justify an entire aesthetic regime. By inextricably entangling computational processes and toolsets with a stylistic agenda, Parametricism actually constitutes a devolution of parametric thinking in its preemptive foreclosure of any other aesthetic possibility.

OBJECTS

Framed largely in reaction against Parametricist dogma is architecture’s recent engagement with philosophies of Speculative Realism and Object Oriented Ontology (OOO), advocated by designers and thinkers such as David Ruy, Tom Wiscombe, Mark Foster Gage, and Michael Young.⁸ In an essay from 2014, Wiscombe outlines an aesthetic agenda informed by OOO principles: an architecture of “discrete chunks” that relate to and engage each other directly, without any allegiance to a more totalizing field or network that

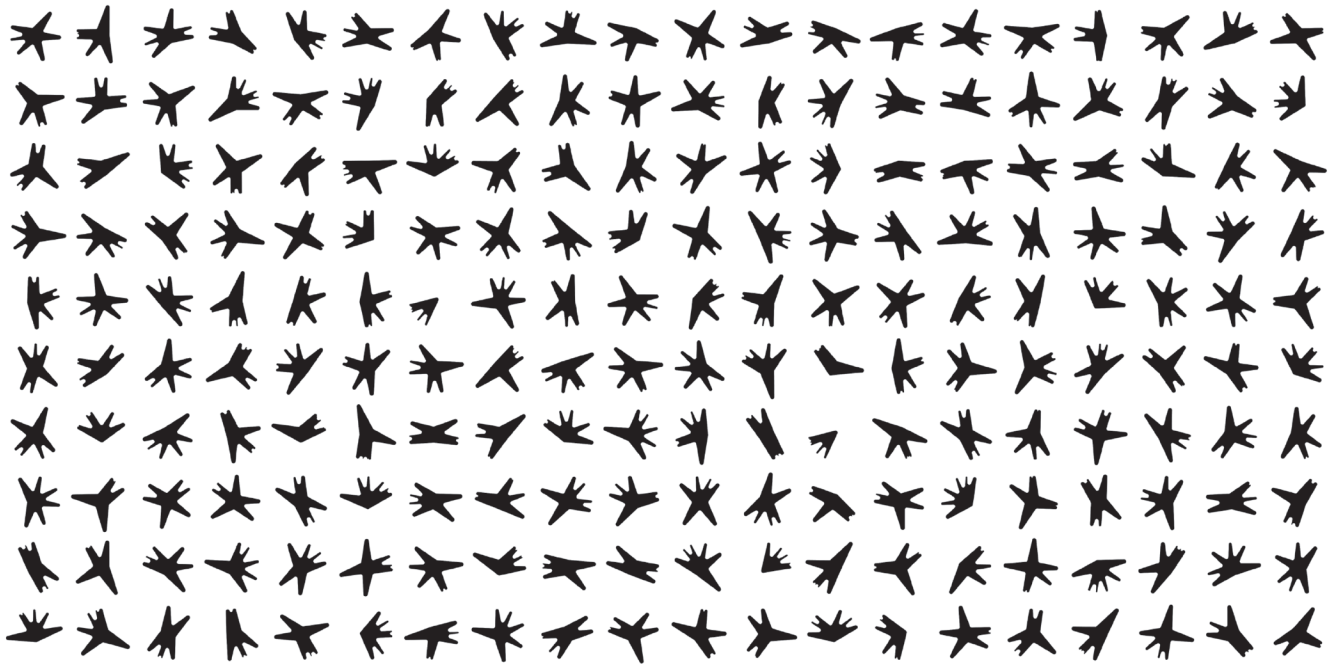


Figure 2: *Figures, Seed 264.*

dictates variation from one part to the next. Contrasting an architecture of surfaces with an architecture of chunks, Wiscombe clearly prefers the latter over the field-driven project of continuity and interconnectivity:

These positions seem to exist in parallel universes: a world of surfaces, which goes on forever in all directions like a sheet, and a world of discrete chunks, consisting of things that can be held up and closely examined like diamonds. In the former, difference is drawn out from a neutral state or expressed as continuous variation, while in the latter, there is no neutral condition, and difference exists within the things themselves. Coherence is not achieved through literal continuity, but rather by way of discrete things acting upon one another.⁹

David Ruy, another OOO protagonist, makes a slightly different argument: one predicated less on aesthetic grounds, and more on questions of process and design agency. If the field project is associated with generative or automatic processes that cede some degree of control to procedures and rules, Ruy instead advocates for the autonomy of the designer having a direct role in form and object making:

New objects come into existence through a strange interaction between objects where new relationships are formed but without the qualities of the originals being exhausted... What exactly happened in this interaction will be occluded. In other words, a successful object-making event cannot be completely encapsulated by a methodology that might repeat the success.¹⁰

Ruy rejects parametric or script-based workflows whereby a set of instructions can produce an outcome that can be repeated. This adds an important overlay to Wiscombe's argument in that Ruy's advocacy of the object project is motivated by questions of process and authorship, rather than by solely aesthetic criteria. But both thinkers stake out clear positions in opposition to the field-driven work associated with computational processes. In many ways, this represents a somewhat predictable, generational reaction: a celebration of object-buildings that consist of clumps and stacks and piles of parts, resisting any kind of aesthetic or tectonic fidelity to field-like coherence or continuous, parametric differentiation that has characterized architectural production for the past twenty years. And while there is certainly a reactionary dimension to this impulse, the Object-Oriented turn does offer a valid and important critique of Parametricism's stylistic endgame. The question, then, is how to articulate the critique without overcompensating and denying that computational processes does indeed have compelling capacities that do not necessarily presuppose the stylistic outcomes associated with Parametricism.

FIGURES

The drawing experiments described in this paper explore how architects operating in the wake of the computational turn can learn from both of these discourses—the field project and the object project. The work forges an approach that is at once critical and affirmational, charting a course through the landscape of post-digital architecture without unnecessarily discarding important capacities afforded by procedural and computational thinking. The project reflects an exhaustion with the so-called digital project of the 1990s and 2000s, but it also resists the temptation for indifference or outright

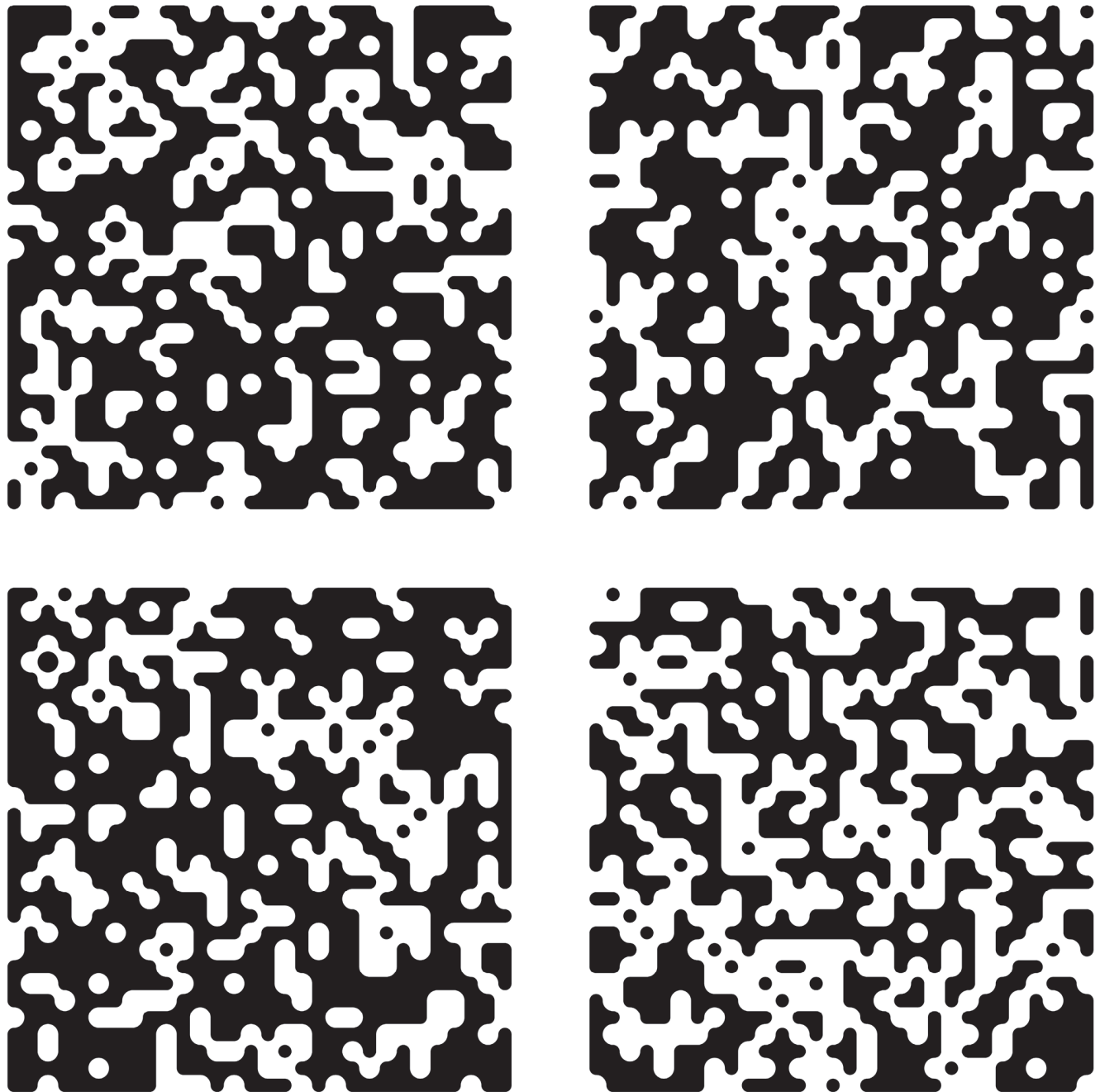


Figure 3: *Nested Figures* series.

rejection of such techniques. These drawings reject the one-to-one correlation between a toolset and a stylistic or aesthetic paradigm, and they aim to stake a claim for a more sophisticated pedagogy of computation within architecture.

The first set of drawings engages in the object-field debate both aesthetically and in terms of process. Their focus is figural geometries—two-dimensional objects that have a defined shape, or what R. E. Somol might call a “precise but vague silhouette.”¹¹ Although these forms are discrete objects, they are generated entirely parametrically according

to simple rule sets. The process begins with a grid of circles, each of which is used to locate a series of randomly generated points. An inner circle is used to locate a second set of points, and together these points construct a simple polygon, which is then rounded at its corners. By changing the random seed, one can see different variations in the resulting figures, but each iteration nonetheless conforms to the initial rule set. Playing this out in a larger grid tests variations and difference from one iteration to the next. Arraying the iterations in a grid allows one to perceive both individual figural difference and collective understanding of the parameters that produce the field.



Figure 4: *Ghosed Figures* series.



Figure 5: Detail, *Ghosed Figures* series.

NESTED FIGURES

A second series explores similar ideas through more complex readings of figure and ground. Rather than arraying discrete figures within a grid, these drawings explore figures nested together within a square boundary. The algorithm begins with a grid of solid cells, which is then reduced according to a random seed that removes a specific percentage of the cells. The resulting geometries then merge together and are rounded at the corners to produce a labyrinth of nested figures that oscillate between figure and ground, solid and void, and interior and exterior. These drawings evoke conventional techniques of representing architectural *poche*, exploring spatial conditions that are at once both discrete fragments and part of a single, collective whole.

GHOSTED FIGURES

The final series of drawings explores how a set of overlapping shapes represented through densely-packed parallel lines can produce blurred relationships between the resultant figure and the picture plane. The geometry is derived from simple circles with variable rectangular voids placed along the perimeter. Three different enclosed regions—the two figures plus the picture plane itself—are rendered through fields of parallel lines of different densities that evoke conventions of hatch patterns often seen in architectural drawings. These densities are calibrated such that they each conform to a common baseline grid, which produces edge conditions of apparent continuity between one figure and the next. The lines can be understood to have a tectonic quality in that they are the individual parts that come together to constitute the “whole” of the figure. The careful calibration of these parts produces the optical effects of oscillation between foreground and background, and an ambiguity between figure and field.

CONCLUSIONS

Underlying these drawing experiments is an insistence on the generative capacity of algorithmic processes to open up new and synthetic understandings of object and field. The intent is to test and demonstrate ways out of the zero-sum game that often characterizes architectural debates over form and process. Although the work is framed through the binary opposition of field and object, it suggests that perhaps such a binary is ultimately not truly productive in considering the role of computation in architecture. The drawings test different methods of reinforcing and undermining both figuration and the consistency of the field, always seeking an oscillation between the two. In doing so, the work demonstrates that discrete objects can maintain individual coherence while also existing within contingent, relational networks that condition their behavior.

Rather than advocating a determinism between technical toolsets and aesthetic outcomes, these drawings suggest that computational workflows need not prescribe specific aesthetic outcomes. The work recognizes the OOO critique

of Parametricism and its stylistic endgame, but it also refuses to dispense with procedural and parametric and computational thinking altogether. It reminds us that the digital turn did produce a tremendous body of technical knowledge and expertise, and we need not throw the baby out with the bathwater in rejecting these tools simply for their present stylistic associations.

The work also suggests how architects might embrace algorithmic processes as a complement to (not as a replacement for) the intuitive, authorial agency of the designer. These drawings embrace the unexpected and unpredictable effects of algorithmic and procedural design, but they also recognize that the parameters and rule sets are deeply subjective and, indeed, controlled and *designed* by the designer. In regard to questions of design agency—the designer’s role in generating form—the work again suggests a hybrid approach, in which the designer melds intuition, procedural and rule-based processes, and a willingness to embrace risk, surprise, and the unexpected that may then emerge.

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ENDNOTES

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