

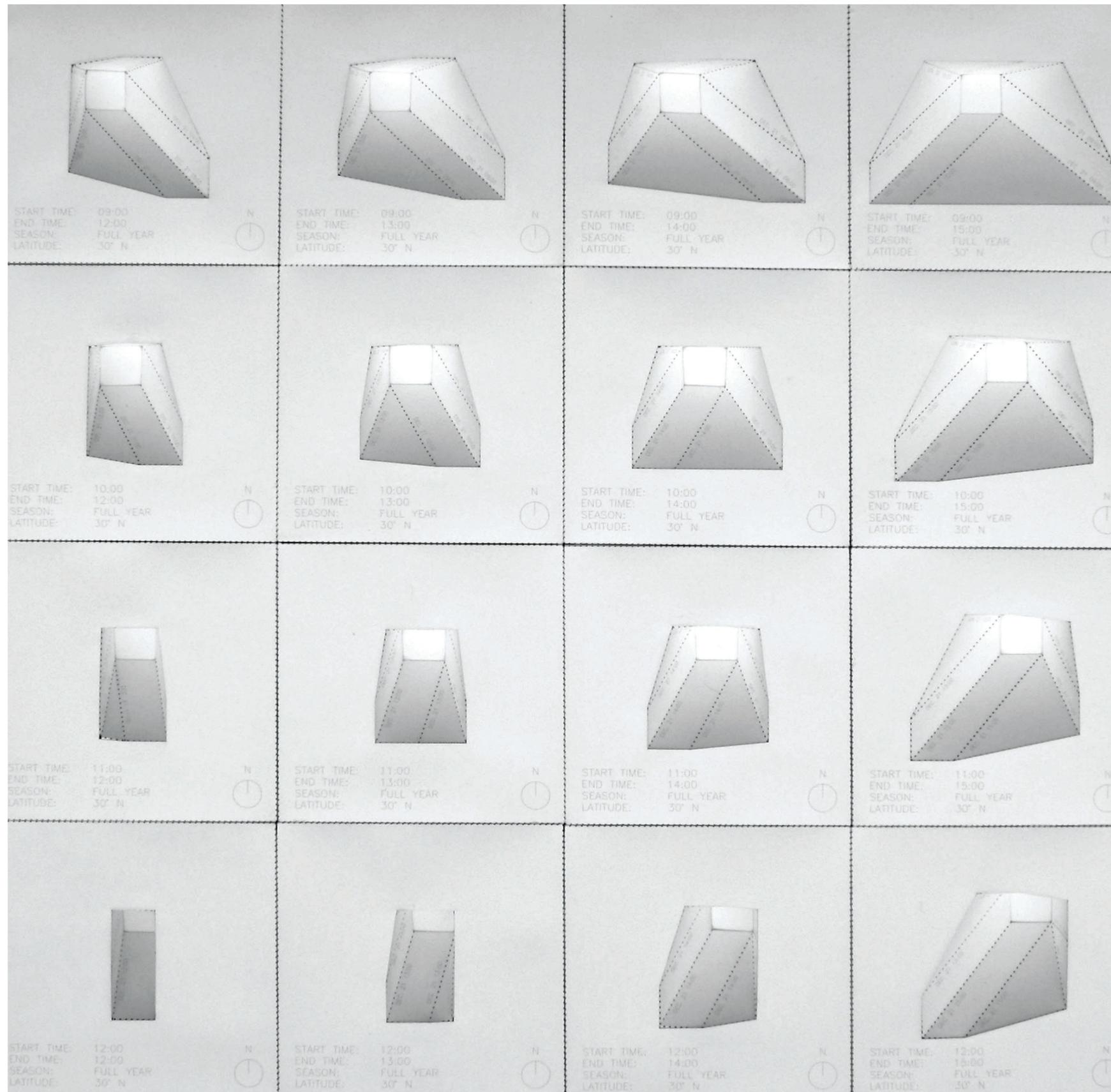
# The Price of Formal Freedom

Marcela Delgado Velasco

In the world of mechanization, the true copy is cast as the virtuous hero and the variant as the villain. The variant is swiftly identified on the production line, seized and eliminated; it is to be avoided at all costs. In the new digital world of continuous differentiation, in which variation reigns supreme, where does the margin for error lie? Liberated from the pressures of standardization, are we suddenly error-free and carefree?

Alongside the rise of the interactive Web 2.0, and the growing malleability of truth, the development of parametric design tools emancipated architects from the restricted vocabulary of Modernism, giving voice to formal ambitions that predated these tools. The potential of the machine to be far more than a drawing tool has been harnessed, allowing us to model and execute complex and continuously differentiated relationships at no extra cost.<sup>1</sup> The use of parametric tools, now ubiquitous, promotes a certain open-endedness and versioning of design that eludes binary definitions, such as right and wrong.

Lured by its reassuring promise of endless design variations and ease of creation, we invite parametric software to join us at every stage of the design and fabrication process. The childlike sense of wonder that moves us when form-finding through real-time physics simulations, the high we get from previewing an array of continuous variations on our screen at the touch of a number slider, the warm feeling of satisfaction we get from holding our latest designs in our hand, effortlessly prototyped by the



latest CAD/CAM technology – all are testaments to the seductive power of these tools. Our relationship with them feels liberating, euphoric and borderline addictive.

Formal innovation made possible through parametric design gives the impression that nothing can go wrong. And yet we soon realize that the risk for error is rather high. With freedom comes responsibility, and the promise of formal freedom demands precise formulation.

In her book *The Architecture of Error: Matter, Measure, and the Misadventures of Precision*, Francesca Hughes argues that redundant precision in our digital design process is fueled by a fear of possible error in a design's materialization: "The concept sketch is the only drawing that has zero precision and consequently zero margin for error. It is pure form, intention before matter, reserving for itself all priority, because it is matterless... Standing for pure form, it needs no precision."<sup>2</sup>

The concept sketch, however, is a relic of past design processes in which too much faith was placed in the eureka moment and the scribble on the back of a cocktail napkin that would later be developed into a building. The use of parametric design tools, in many cases, has replaced the hand-drawn concept sketch. They are introduced in the initial conceptual design phase, in which various parameters and forces are put into play. The fear of error that would normally be deferred to later design stages is now creeping in and taking hold of the designer early on.

Error and the reasons for fearing it when using parametric software are not associated with the loss of control in the final form's materialization. Parametric tools force us to understand form in terms of formation: "The whole theory of digital differentiability in architecture is predicated upon notational (i.e. informational) variations– on objectiles, not on physical objects."<sup>3</sup> Our angst is not about the creation of the object in the real world but rather about possible error in the thinking behind the objectile.

In comes the design process, taking center stage. As designers, are we asking the right questions? Are we establishing the rules or following rules conceived by someone else? Are we identifying, analyzing and integrating dynamic forces in our design process? Are we aware of and in control of our critical design thinking? Are we formulating intelligent design concepts?

Precision in setting up parametric definitions demands that we ask these questions, which must be answered before an algorithm can be created; the tool is not the designer after all. Thinking must come before making, and the anxiety that this might provoke can either be paralyzing or infinitely productive.

#### Notes

1. Antoine Picon, *Digital Culture in Architecture: An Introduction for the Design Professions* (Basel: Birkhauser, 2010) 60.
2. Francesca Hughes, *The Architecture of Error. Matter, Measure, and the Misadventures of Precision* (Cambridge: The MIT Press, 2014) 41.
3. Mario Carpo, *The Alphabet and the Algorithm* (Cambridge: The MIT Press, 2011), 114-115.

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