





## Smart DOTS + Soft MOBS: NY 2028 Environmental Mobility

by **Mitchell Joachim, Aurel von Richthofen, Lydia Kallipoliti, Matt Cunningham, Fred James, Maria Aiolova**  
Terreform ONE

**Smart DOTS** is a radical strategy for rethinking the crossroad by “injecting” a system of intelligent environmental elements -“smart dots”- that can spread out from the core to the periphery, reorganizing the streetscape. The design scheme is a critique of the hard boundaries that the automobile inflicts to the function of the streetscape, where people are forced to move around cumbersome barriers and often dangerous metal cars. Our future street is a soft, gradient field: a “pixelated” urban landscape of distributed functions, with no hard borders between different street occupancies.

**Soft MOBS** invokes a new technological and material arrangement for adapting cars to cities in pliable organized movements -“soft mobs,”- while it also suggests the use of softer vehicles where users can be in direct contact with the street. While architects and urban designers mostly take cars as given, and are content to design streets and public spaces around car movement, here we challenge and reverse this well-worn assumption.

The design is organized in three phases 2008, 2020 and 2028 respectively. In Phase 2008, we suggest to take minor design interventions as immediate safety measurements against continual conflicts of pedestrians with automobiles. Phase 2020, signals a transition period, where car lanes are narrowed, pedestrian zones are widened, bicycle bollards are introduced with new car technology and gentle congestion. Already in Phase 2020, we are suggesting the placement of environmental “smart dots,” or green modules that filter rainfall, greywater, and at the same time, slow down traffic separating smoothly walking zones, bicycles and transportation zones. Phase 2028 is the future embodied in “pixelated” surfaces, gradient green zones, and living self-sufficient machines that provide their own energy, generating electricity through air movement. In the future, giant benevolent air-cleansing blimps dangle tentacles to collide spongy seats in a playful catch-and-release plan for people moving about town. All life is enveloped in a sentient ecology of street, mobile systems, and people.

While the proposal is specifically tailored for the Ninth & Fourth intersection in Brooklyn, it signals a new vision for the city, crystallizing images of civilization reinventing itself. Smart DOTS and Soft MOBS may function as a prototypical strategy for inserting soft plazas in various street intersections. We can rethink the city as whole by making nodal changes that may grow to infiltrate the rigid grid in which we currently live.

2008-2010  
form•Z

Partnerships in Learning 17

Joint Study Journal

The

**fantastic**

and the

**constructible**

Guest Editor: **Kevin A. Cespedes**



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# Partnerships in Learning 17

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## Acknowledgements

I would like to give my personal thanks to all of our contributors, who have brought new insight into the discourse of design education using digital media. Their pioneering research toward new educational methods will impact the discipline for years to come. I extend my appreciation to the peer reviewers, for without their help and guidance, the sustained level of content quality would not have been possible. I'd also like to give special thanks to Tamara Suderman, in her role as Assistant Editor to the Guest Editor, for her tireless efforts to help make this publication a sound collection of thoughts from various points of view, engaging at each turn of a page.

*Kevin A. Cespedes*

## Image Credits

*Front Cover* by **Samuel Tannenbaum**, Texas Tech University

*Back Cover* by **Thomas Rusher**, University of Texas at Arlington

*Inside Title (page 1)* by **Mitchell Joachim**

## About the form•Z Joint Study Program

The **form•Z** Joint Study is a program by which AutoDesSys Inc. supports and subsidizes the learning of the new digital tools, primarily 3D modeling, by students at Universities and High Schools worldwide. When schools agree to incorporate 3D modeling in their curriculum, AutoDesSys provides them with **form•Z** and/or **bonzai3d** licenses, one year at a time, at the cost of material and processing. In return the schools agree to report about their experiences, to offer recommendations, and to share the projects produced by their students or researchers. This publication is largely, but not exclusively, based on that material.

## Preface

The 17<sup>th</sup> issue of the form•Z Joint Study Journal is here, early in the academic year to benefit those who have been part of the Joint Study Program, as well as all others who have a keen interest in 3D design. We owe this to the outstanding efforts of this year's Guest Editor, Kevin A. Cespedes, the contributors, and the reviewers, who have been instrumental in producing an admirably relevant and contemporary publication that will prove a valuable teaching resource. Our sincere thanks to all of them!

This Journal is bi-annual due to the delayed publication of the previous issue. It covers the years from 2008 to 2010. As it became impractical to produce a Journal for 2008-09, the contributions for that year were put off and were combined with those for 2009-10. As a result of this, the student awards and the material referred to in the articles span two academic years. Consequently, the content is richer and more abundant and AutoDesSys may consider adopting this schedule as a norm for its future academic publications.

While this issue of the Journal is available in print, on DVD, and online, we have seen indications that currently people prefer the latter two variations. Preferring to view this Journal on a screen or online is only one of the changes that have occurred since the early issues of the Joint Study annual publications. The field of computer-aided design has matured impressively as have the digital tools, which are not a novelty anymore. Instead, they have become a standard in the practice of all design fields. We do not debate the appropriateness of these tools anymore, but we seek to uncover their potentialities, the possibilities, and the capabilities with which they arm the designer. Especially the younger generation of designers who were brought up and educated almost exclusively with digital tools are frequently anxious and excited to unravel all kinds of forms that they often do not even anticipate. They face the task of figuring out whether the virtual entities they produce on their screens can be constructed. This is the theme of this Journal.

When Kevin Cespedes proposed the theme "The Fantastic and the Constructible," we gladly realized the opportunity to provide a forum for a very real and current subject that has surfaced mostly due to the available digital tools. Kevin has done an excellent job in assembling contributions that elaborate on both fantastic and constructible projects, but above all that debate how the former may inspire and drive the latter, resulting in forms never before attempted. There are also contributions that look into the promises of the future and seem to conclude that the possibilities are rather endless.

One person who predicted and prescribed today's state of the digital tools rather persuasively, when they were still the "future," starting back some 40 years ago, was William Mitchell, who passed away earlier this year. The idea to dedicate this Journal to him came out of the interview that Kevin did with Mitch and Andrzej (see page 72). AutoDesSys is delighted to have embraced it. Bill had not only been a strong friend of the early research that went into form•Z, he had also provided some crucial input to the direction the program took, since its early days. All of us, workers of the digital tools, will be forever indebted to him and the legacy he leaves behind.

C. I. Y.

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Boston Architectural College and Wentworth Institute of Technology

# The **Fantastic** and the **Constructible**

When I first proposed 'the fantastic and the constructible' as a theme for this edition of the form•Z Joint Study Program Journal, I hoped that using this ultimately false dichotomy as a framework for discussion would inspire the submission of essays and projects of widely differing types and design philosophies. I hoped to solicit diverse interpretations in order to include a variety of viewpoints into one issue. The student work in the following pages is the result.

However, one should not interpret this juxtaposition of terms as a dualistic opposition. It is my hope that the relationship between the fantastic and the constructible is evolving into a *consilience*, or a cooperative interplay. To put this issue into the proper context, about 20 years have passed since the initial widespread introduction of CAD to design and to design education, an exciting development that has wholly transformed the discipline. While that first shine, that initial seductiveness, and that purity of the discovery of new tools and methods has receded, digital media are now growing toward greater maturity and toward full integration within the design professions. Construction and manufacturing innovations under the digital paradigm have mirrored these changes. This issue showcases newly acquired digital methodologies and techniques, largely utilized with the kind of restraint and judgment we have come to expect from traditional analog techniques.

While the journal reports feedback on the existing use of the program as an exploratory tool in design education, it also intends to inform further enhancement of the tools: whether in the form of revised software releases, improvements in rapid prototyping, or even in the development of new digital manufacturing techniques. All the peripheral

design disciplines benefit from this kind of inquiry and discussion at the academic level.

Full integration of analog and digital tools will be the key to the next stage of progress in design education. The use of mixed techniques, depending upon the desired result rather than upon limitations in the use of digital media (such as prohibitive cost or lack of expertise), is becoming much more the norm as time passes, and as students' adoption of digital techniques occurs much earlier in their exposure to design. Digital processes and techniques potentially can approach the same complexity as we see in the natural world, and this should be a reminder to us of the complexity inherent within all given design problems. We should expect an equal measure of complexity from our design solutions (not to be confused with complication).

It is an exciting moment, as design professionals and students peer into the future. One could say we really have our hands full. That shine, that moment of discovery is not on the wane... but now discovery is tempered with reality, and we are poised to address issues concerning the constructability or sustainability of complex projects. We move toward being able to create realities that we proposed initially as fantastic and theoretical propositions, but with the wisdom to consider which ones are better left only in that realm, as the gap between theoretical propositions and their construction narrows. While we explore the playground of new tools, we should also evaluate how their use best serves our purpose. Discovering new avenues within digital media will always be an ongoing process with trials and with definite errors, as well as progress toward innovation.

Kevin A. Cespedes