What's in a Form?

Let's start with a square. Four equal sides, four equal angles. It's a regular polygon, a certain rhombus, a special case of the rectangle. Now rotate it 90 degrees clockwise and have a look: nothing really changes. Flip the square horizontally, flip it vertically, or even mirror it about its diagonal and still, nothing changes. The square's four points and the lines that connect them maintain their relationships to one another, invariant through this group of transformations. Solid, static, resolute—the square is the picture of stability.

A square can be described by the outstretched arms and legs of a human body or a square can be derived from the uppercase shape of the first letter of the Roman alphabet. It can be developed from its diagonal or produced by a special recursive curve. Put four equal squares together and you've got a grid. 8 x 8 squares and the grid becomes a checkerboard. Spin it 45 degrees and it's a diamond, though still, nothing changes. Numbers can also be "squared," or a number's square root calculated by finding the length of the square's side whose area it equals. A similar insight led Pythogoras to his theorem and revealed the existence of irrational numbers.

Then, let's try another operation with the square. Run a line from the midpoint of its base to the midpoint of the side opposite. This line bisects the square vertically. Now, pivot the line 90 degrees clockwise to produce the long side of another, rather curious, rectangle. It's "golden" and this shiny new shape has its own peculiar properties which are consequences of its construction. In a golden rectangle, the ratio of its length to its width is equal to the ratio of one side of its root square to the distance that side was extended. Subtract a square from this golden rectangle, and you're left with another, equally golden rectangle. Alternately, add a square to the long side of the rectangle and that produces another new, golden rectangle. This process continues *ad infinitum* in either direction, producing a logarithmic growth pattern encoded in the form and generated by its replication. The same spiral growth signature is also repeated, famously, in the arrangement of sunflower seeds, the chambers of a nautilus shell, and even the cosmic swirl of certain star clusters. The essentially static form of the square then becomes a robust, generative process for producing its opposite: pure, dynamic, exponential growth.

And so it is with any form: it is, at once, complete and static while also harboring the possibility of generating something new. The word itself originally implied this forgotten dimension: "Form" meant formative cause,* or the process that led to the fixed fact of its shape. Design is bound together with form anyway, as we both propose forms and also use form** to evolve our proposals.

Graphic design has no real subject matter of its own, so this class will intersect with an exhibition of works by David Dobkin opening September 19 in the Lucas Gallery at 185 Nassau Street. Dobkin has been on the Princeton faculty since 1981 and is currently Phillip Y. Goldman '86 Professor of Computer Science where his research in Computational Geometry intersects mathematics, computation, visualization and computer graphics. Since 2003, Dobkin has served as Dean of Faculty. But he is also an accomplished collector, assembling groups of forms like snow globes, pennies, postcards, yogurt lids, mother boards, popsicle sticks, credit cards, compact discs, pictures of phone booths, clocks. Dobkin then makes new things from these collections: pennies kept in stacks, housed in custom acrylic towers and organized by year circling his office; yogurt lids attached with paper clips to form curtains; clocks sprinkled across his office to remind visitors of a Dean's tight schedule.

"Myself, I Think We Should Keep Collecting Titles" is the title of the exhibition, and this hints at the process underlying it. It seems that Dobkin trolls the two-way street of form much in the way I'd like to address in this class. Objects of similar form are collected, these collections are organized and assembled, and these are then reassembled to generate new form.***

This class builds on your previous graphic design experience at Princeton. You will work both individually and collectively through a series of linked studio assignments which ask you to consider how form can be both a thing and a process. The principal project over the semester is to design a catalog for David Dobkin's show that departs from and extends its themes. Texts solicited from Princeton faculty together with the exhibition itself and its abundant sources will serve as raw material and our publication will be produced collectively, published as a PDF and print-on-demand book, and released at the end of the semester.

* "Driving one day down one of the big motorways I happened to see a big bush in the middle of a meadow, and this set a whole train of ideas going in my mind. Whether or not they might have some practical application must be left to the future to decide. In any case, here they are. That big bush in the meadow looked to me like an explosion caught and fixed at its point of maximum expansion. If I were to take a photo of that bush, slightly out of focus, and show it to you side by side with a photo of a hand grenade exploding, the two things would have the same form. One might say that a firework in nothing other than a tree or a big artificial flower that grows, blooms, and dies in the course of a few seconds. After that it withers and falls to the ground in unrecognizable shreds. Well then, let us take this firework and make it last a month, stretching the time element but leaving everything else as it is. What we will get will be a flower, with all the visual characteristics of other flowers. Or let us imagine that the seed of a tree might explode like a bomb. In such a case we would have a tree in a matter of minutes, rather as we can watch the growth of a flower on film by running the film through quicker. Our tree would have straight branches, as in an explosion the bits fly off in straight lines before describing a parabola. In the normal way the explosion of a tree happens very slowly and the branches, instead of being straight, grow crooked for a number of reasons: atmospheric conditions, the course of the sap, the prevailing wind and many others. But of course there are small fireworks that describe trajectories not unlike the torturous growth of a vine or olive." (Bruno Munari, *Design as Art*)

** "Art has no choice but to break away from all the established formal systems, since its main way of speaking is as form. In other words—and this amounts to an aesthetic principle—the only meaningful way in which art can speak of man and his world is by organizing its forms in a particular way and not by making pronouncements with them. Form must not be a vehicle for thought; it must be a way of thinking." (Umberto Eco, *The Open Work*)

*** Design works similarly, perhaps. You begin with a definite plan, which intersects with a specific situation and its constraints, which then revise the plan and so on, iteratively. The finished result is produced by this negotiation, and in the best situations, manages not to obliterate the conditions that produced it.
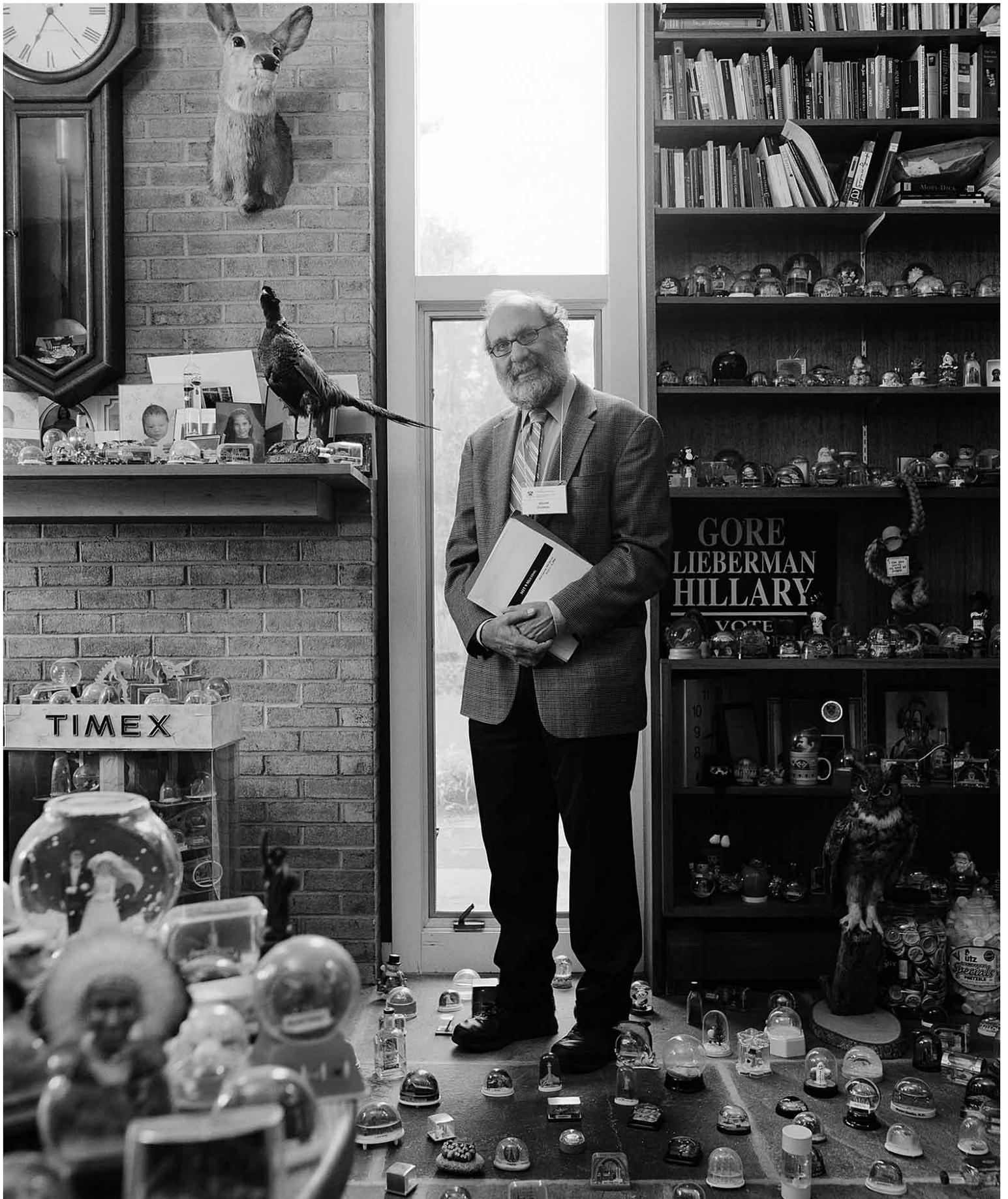
David Dobkin at home with some of his collected objects
(Photograph Julian Germain)

VIS 415, Advanced Graphic Design
Princeton University
185 Nassau Room 304
Thu 1:30 – 4:20 pm
David Reinfurt / reinfurt@princeton.edu
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Class Schedule

September 12   Introduction
                 Lecture — "What's in a Form?"
                 Exercise — 9 squares

September 19   Assignment 1: Research
                 "Myself, I Think We Should Keep Collecting Titles" opens
                 Lucas Gallery, 185 Nassau Street, 6pm
                 Reading — "Form + Content," *Design, Form and Chaos*,
                 Paul Rand

September 26   Assignment 1 continues
                 Class meets in Lucas Gallery
                 David Dobkin class visit
                 Reading — *Entropy and Art*, Rudolph Arnheim

October 3   Assignment 2: Organization
                 Project introduction and individual meetings
                 Research presentations
                 Reading — "The Poetics of the Open Work," *The Open Work,*
                 Umberto Eco

October 10   Assignment 2 continues
                 Project review, in-class critique
                 Film — "Design Q and A,"
                 "Powers of Ten: About the Relative Size of Things in the Universe,"
                 "A Communications Primer," The Office of Charles and Ray Eames
                 Reading — "A Happy Octopus," Philip and Phylis Morrison,
                 The Work of Charles and Ray Eames

October 17   Assignment 2 continues
                 All texts due from exhibition writers
                 Project review, in-class critique
                 Reading — *The New Landscape in Art and Science*, Gyorgy Kepes

October 24   Assignment 3: Production
                 Class meets in the gallery, 185 Nassau Street
                 Lecture — "Bruno Munari, c. 1962"
                 Reading — *Drawing a Tree*, Bruno Munari

October 31   Fall break, no class

November 7   Assignment 3 continues
                 Group review
                 Video — "Ways of Seeing"
                 Reading — *Ways of Seeing*, John Berger

November 14   Assignment 3 continues
                 Individual reviews and discussion
                 Reading — *A Primer of Visual Literacy,* Donis A. Dondis

November 21   Assignment 3 continues
                Individual reviews and discussion
                Lecture — *The Medium is the Massage*
                Reading — "Messaging the Message," Ellen Lupton, Abbott Miller,
                Design Writing Research

November 29   Thanksgiving, no class.

December 5   Assignment 3 continues
                Individual meetings and class discussion
                Meetings continue outside of class as required.
                Reading — "Design and Crime," *Design and Crime*, Hal Foster

December 12   Assignment 3 ends
                Final review with visiting critics

January 6   All final work due