

Making Meaning

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Faculty: [Chris Pacione](#)

School: *Carnegie Mellon University, School of Design.*

Students: *Junior and senior undergraduates, first-year masters-level graduates.*



Chris Pacione takes credit for inventing this project in 1997, after finding himself becoming professionally involved in the design of physical product interfaces, digital interfaces and conceptual explorations of the role of wireless, mobile and wearable computers. Addressing the blurring of boundaries between the digital and physical components of products, Pacione developed the following project as part of a course called Visual Interface Design offered at CMU's School of Design. The class served as a foundation for first-year graduates as well as junior and senior undergraduates. His approach to the course reflects a recognized need for fundamental training in interaction design paralleling fundamentals in the visual arts. Among his central concerns in teaching is broadening the designer's interaction palette, "to go beyond the overused design widgets and develop a grammar for creating rich, meaningful, usable interactions."

Pacione has his students focus only on the interaction, which he suggests consists of three parts:

1. Semantics before interaction. This is traditional product semantics—considering how a product looks so that it communicates what it does (e.g., a hammer communicates how to hold it).
2. Feedback during interaction. This is how the object behaves so that it reinforces what it does, or what it's doing (e.g., a light turns on as a result of a hand passing over a colored area).
3. Reflection after interaction. This is what the person should know after she has finished interacting.

By understanding these parts, Pacione believes designers can better manipulate their designs to influence different interactions.

Original problem statement

For the most part, the focus of the design profession is on the creation of form, with a loose understanding that form has the power to evoke associations and cause interaction, hence the familiar phrase "form follows function." While this statement is not untrue, the field of design is going through a transformation. The growing complexity and increased use of everyday objects like VCR's, ATM's, PDA's, PC's, as well as other simpler electronic machines, has caused designers to shift their focus from design as simply a form-giving process, to design as a process of enabling interaction.

Designers enable interaction and affect an experience through the interfaces they design. The way we use a product is as important as what that product can do, or what it looks like, thus the issue of what an object means or causes one to do with it has moved to the foreground.

This four-week assignment has a 2-D (digital) and a 3-D (physical) component. The purpose is to challenge your assumptions about how you design by focusing almost exclusively on the situation you are designing for and to encourage you to create innovative kinds of interactivity through forms that go beyond the overused, all-pervasive button.



[Chris Pacione's Visual Interface Design class critiques three-dimensional models](#)

Part 1 Physical Component

Starting with a cube, design an interactive object that you think best communicates each of the following uses. Each cube should look as if one should/can:

- Rub it
- Turn it
- Squeeze it

The cube can be no bigger than six inches in any dimension. You may add or subtract from the cube, but it has to remain cube-like. Other shapes may be used, as long as they play a secondary role. You may also use color, texture, material as well as a relative context. For example, the final solution might be a green fuzzy cube with little circular nibs, placed on the floor.



Part 2 Digital Component

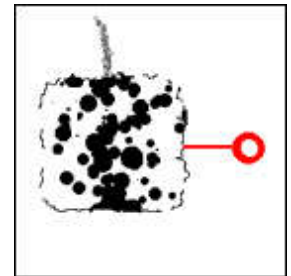
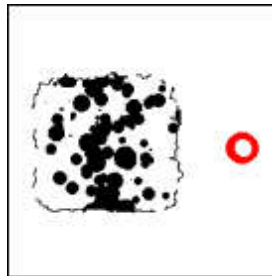
Starting with a square, design an interactive, on-screen image that best communicates all of the following uses. The square should look as if one should/can:

- Turn it
- Move or drag it
- Rub on it

The square can be no larger than 80 x 80 pixels. Like the cube, you can add or subtract from it, but the final solution has to be based on the image of a square (and should look squarish and not roundish). However, circular or triangular shapes may be used in support of the design. You should also consider how animation, sound, color and texture can be used as cues.

These problems are stripped down to their essence and the context is largely removed. By removing the context, students are able to focus in on the problem of invoking a particular interaction. Thus, students reframe the way they think about what they do. They are encouraged to use visual, audio, and tactile clues to prompt users to do very specific things. This requires the users to understand something very specific about the objects they are interacting with.

The physical 3-D models emphasize materials in combination with form to communicate the designers' intentions. The color, texture, apparent weight and careful consideration to changes of form within each cube become important signals. Reflection after



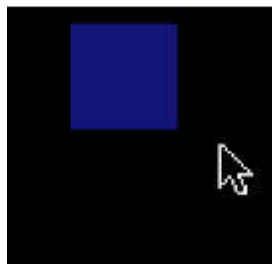
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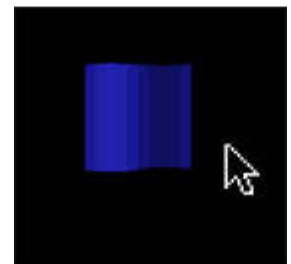
Greg Chilesko



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interaction involves a full range of sensory participation on the part of the user as the cubes are picked up or touched, held or pressed, turned or moved.

The simplicity of the 2-D digital models masks the technical complexity to achieve even a limited range of on-screen interaction. However, like the 3-D models, formal aspects become the chief communicative cues for the user, and the qualities of on-screen interaction provide an interesting comparison to those involved with the 3-D models. 

 **Chris Pacione** is chief creative officer and co-founder of BodyMedia, a healthy lifestyle company providing interactive services via the Web and wearable health monitors that help people develop and maintain healthy daily routines. Previously, Pacione co-founded and was the chief design officer of SANDbOX Advanced Development, a design consultancy focused on the future of computing and the positive social interactions it can enable. He was also a McCandless Chair Professor at Carnegie Mellon University's School of Design from 1997 to 2000 where he taught courses in interaction design, information design and drawing.