

Formal Elegance and Multi-modal Command Objects

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Technology has spawned the growth of societal, national, and global relationships. Consequently, one-on-one information dissemination is rare. The method of mass communication has stifled the possibility for multi-personal interaction on an intimate level. That is, we receive movies, TV, radio, periodicals, and public advertisements without the option to directly respond. The result is a feeling of helplessness. No voice. No room for action. We sallow in the shade of the media giants.

Using interactive software for direct communication with mass media would make it easy for people to ask and speak for themselves and their society. With equality through voice, the quality of life is improved. Empowering individuals to communicate across cultures and national boundaries will allow us to share our diversity and become less self-centered in our planning.

Cross-cultural interaction requires well designed recognition oriented interfaces that perform the diversified tasks computers perform. The buttons, slides, levers, and layout of interfaces should make the use of interactive computer software transparent. Present GUIs provide only anemic representations of the interactive tools needed by users. Thus, communication is hindered; the advance of broad human interaction is stalled.

This series of six posters investigates multi-modal command objects as they exist in our current environment. Formal and visual communication design are what make command objects valuable tools. Ultimately, I will apply this understanding to interactive human-computer interfaces. More intuitive, better functioning interactive tools are desired.

Definition

A command object is any mechanism, mechanical or otherwise, which when manipulated directs an action. Usually, these controllers will have at least one movable piece. They perform a variety of functions such as access information (TV dial), produce a desired effect (typewriter key), enable/disable an object (turn on/off a drill press). Command objects must directly communicate with another object: light switch, steering wheel, door lock. This excludes drawer pulls, inactive objects such as a screwdriver, and crescent wrenches. (If attached to a nut, the wrench would qualify because when turned, it affects the nut. However, alone the wrench doesn't command anything).

"Multi-modal" refers to the functionality of the command object. Each object has a minimum of one "mode" or program setting such as "on" or "off." Usually multi-modal infers a physical differentiation between the "on" position and the "off." Of course, there are exceptions. A three-way lamp switch designates the brightness of the bulb by the number of times it is turned; each turn ends where it began.

Design Decision

Why depict the results of this research in poster form? The shape of command objects and what functionality they graphically communicate is the focus. When abstracted and put into 2D, they can be evaluated without concrete associations of feel and actual functionality.

Size

We take common command objects for granted. When an object takes on exaggerated proportions our concept of its functionality and individual physical attributes also is exaggerated.

Production Method

Researching command objects in our urban environment for subsequent trans-

lation to the computer monitor requires both physical research and a comprehensive understanding of design for light-emitting substrates. Thus the marriage of photography and computer created graphics is ideal.

Substrate

Translucent film is a mediator between reflective 3D objects and light-emitting media, such as video or computer monitors.

Display Method

In harmony with a translucent substrate, transparent media on both sides of the graphic allow light to come from behind. Hanging the graphics away from the wall forces the viewers to interact with their dimensionality and furthers the exaggerated size-functionality relationship.

Printing Method

Creation via a computer, the translucence requirement, limited production, and natural time constraints all point to electronic printing.

Environment

The environment where a command object exists affects the type of object used. Obviously, switches and buttons in a machine shop will require different safety features than those in a nursery. The type of object used is sometimes indicative of its environment. For this reason, controllers were researched by their environment. Homes, schools, offices, video arcades, transportation vehicles, and public areas are the most common zones where we habituate and/or use controller devices.

The definition of interactive command objects for children needs to be slightly adjusted. Obviously, high-powered, intuitive, trigger-oriented mechanisms will leave a child lost, confused, or disinterested. Leaving a child with the responsi-

bility of a powerful, non-intuitive command object is not commonly considered wise. For this reason, children are first introduced to simplified versions of command objects and gradually progress to more advanced objects requiring more dexterity and understanding.

Intuitive

"What are intuitive command objects for children?" is an invaluable question whose answer sheds light on "What are intuitive command objects for adults?". Researching tactile objects for young children in the classroom makes it apparent that "intuitive" for adults is not "intuitive" at all. Rather, what we think of as being "intuitive" are really those objects we've been familiar with since we were young. Toys and learning tools are comprised of simplified versions of what adults use. Steering wheels are colorful, larger; buttons are bigger and require exaggerated

energy to manipulate. When designing command objects for computer interfaces, closely observing those children regularly use is invaluable. Exaggerated movements, intuitive applications, wise color usage, and powerful graphics are important factors for successful command object representation.

Functional Categorization

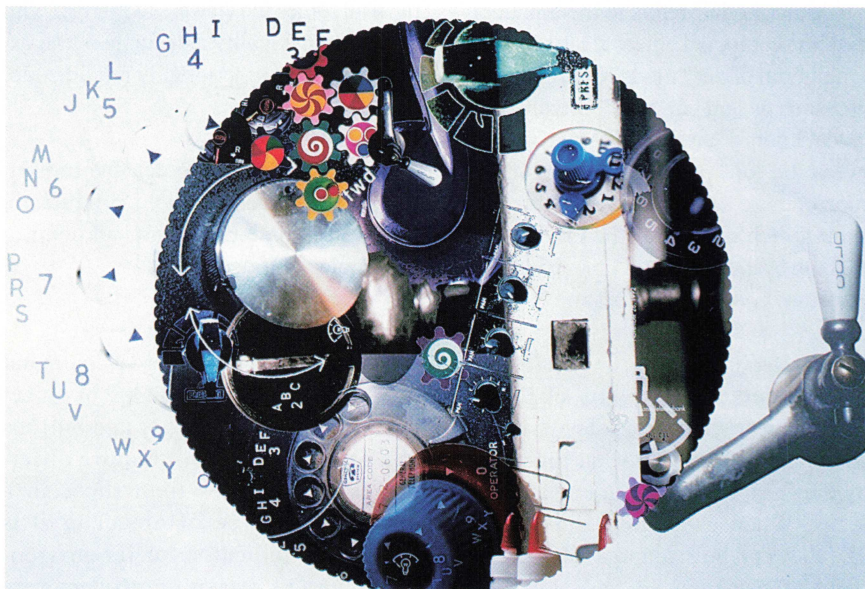
How can command objects be categorized functionally? In other words, how can the way we interact with them be differentiated? The most basic way to define the different types is in terms of their movement in space. Those that move mostly along the z axis are items that we "push," "pull," or "insert." "Slide" and "dial" move within the x and y axes. Circular pivotal motion includes "flip, push, pull, dial, and crank." Command objects that use a "ball joint" are of the joy stick and digitizer variety. Another type of ob-

ject that can move in 3D is a squeezable item such as an atomizer. Other common titles for command objects are navigator, controller, stick, rod, lever, crowbar, pry, prize, jimmy, button, fastener, handle, winder, key, indicator, gauge, joy stick, glide, (steering) wheel, switch, and knob.

Ultimately, command devices are categorized here, not mathematically, but in terms of how their function is commonly labeled. Because the physical space definition is so basic, a more defined definition is in terms of the way we are familiar with them. Ten groupings were discovered: slide, crank, ball joint, squeeze, sensor, push, insert, dial, pull, and flip. The most commonly used objects are push, insert, dial, pull, and flip. Thus they are given the most attention in this study. These groupings need to be viewed as elements (which often work together) that create command objects. Rarely do they work alone; however, one element often dominates. For example, inserting a key into the ignition is one action, turning the key is another. "Insert" creates the connection, turn triggers the spark. Insert initiated the process and thus dominates the command.

No command object is an island. For successful understanding and use, visual and formal graphic communication are paramount. It is important to remember that sophisticated command devices work together. For translation to a computer or video monitor, as expected, the variety of controller resources has not been tapped. Successful design for human-computer interaction relies on a great understanding of current effective command objects and superior transference of that knowledge to a computer or video monitor.

The Formal Elegance and Multi-modal Command Objects poster series was developed at UCLA with the guidance of the Department of Design and its outstanding faculty. All photography and design of the series were created by Danielle Eubank. The original photographs were scanned with a Microtek ScanMaker 600zs. They were collaged on an Apple Macintosh IIfx and printed to poster size from SyQuest disks by a Canon Color Bubble-Jet Copier A1.



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