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THE CBT CRAFTSMAN

The Graphic Touch

Effective, instructional use of graphics is one sure sign of craftsmanship in CBT development.

Jesse M. Heines

Exactly one year has passed since I began calling myself "The CBT Craftsman." When I began using the moniker, I feared that some might consider it self-serving or even presumptuous. To my surprise and pleasure, no one has accused me of either impropriety. In fact, most people to whom I have shown my work have commented that the craftsmanship clearly shows through. Although such compliments obviously boost my ego, I gain even greater personal satisfaction from seeing the craftsmanship concepts I espouse being applied in an ever-increasing number of courseware development efforts. I may be "The CBT Craftsman," but I'm not the *only* CBT Craftsman. Starting this month and continuing in my next few columns, I therefore intend to highlight the work of fellow CBT developers whom I consider to be true craftspeople. I invite readers to bring other talented developers to my attention so that I may highlight their work in this space and so that we may all learn from their creativity.

I begin this new endeavor by concentrating on the most visible sign of craftsmanship: graphics. Graphics are more often abused than used effectively, and they are often added to courseware in a gratuitous manner. That is, one often finds graphics shoehorned into instructional sequences for marketing purposes rather than used where they make sense for instructional purposes. There is one place, however, where non-instructional graphics make sense: in title displays. But just as knowledge of how to use a test editor does not make a good writer, knowledge of how to use a graphics editor does not make an artist. Once again I return to the theme of course development teams. We need instructional designers to plan our courseware, programmers to implement it, and graphic artists to illustrate it.

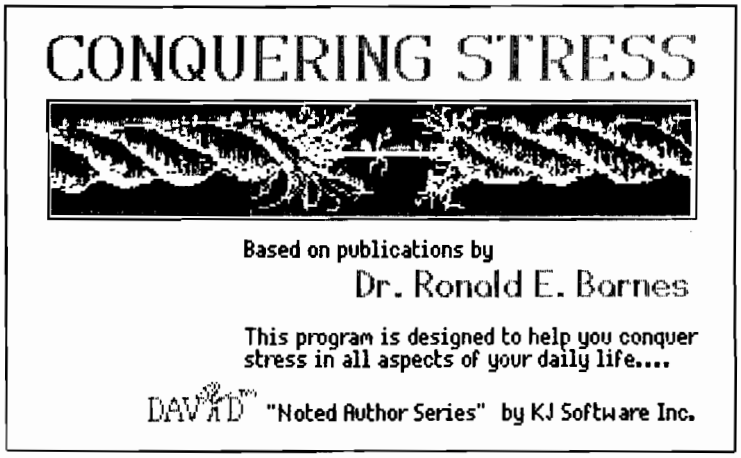

Fig. 1. In this reproduction, it is difficult to see the shading technique used to give the rope a sense of roundedness, but the white dots on the underside of the rope provide some feel for it. Copyright 1985 KJ Software, Inc., reproduced with permission.

Figure 1 shows a title display developed by Brian Tritch for KJ Software, Inc., of Phoenix, Arizona. The rope graphic in this display was created using *PC Design*, a graphics editor specifically developed to interface with the *Koala Pad*, a small graphics tablet available from Koala Technologies, Inc., of Santa Clara, California. Both the graphics tablet and its complementary software may be purchased for about $100. Only the graphic was created using *PC Design*; all of the text was created using an independent font editor built into the authoring system that displayed the graphic.

Of course, you can't possibly enjoy the whole effect of this color graphic in the black and white reproduction shown here, but you can certainly see the care taken to make the ends of the rope frazzled and dangerously close to breaking. It is difficult

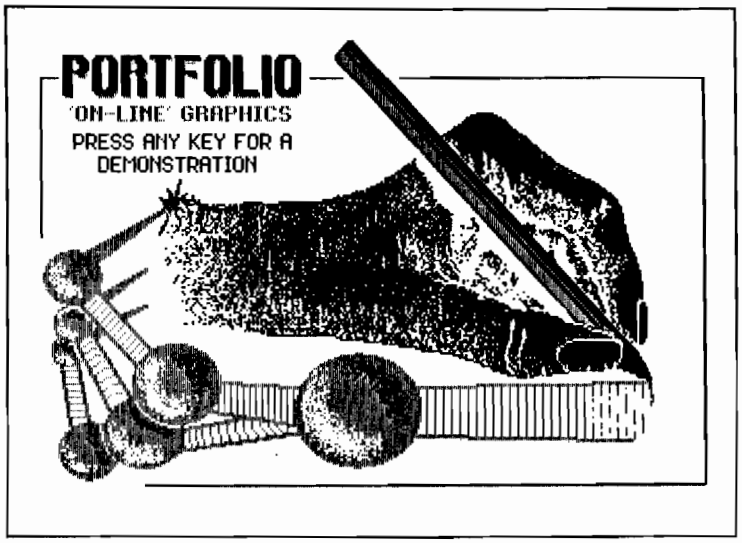

Fig. 2. The application of texture is shown more clearly in this screen by Jon Hall. Copyright 1985 Educational Technology, Ltd. Reproduced with permission.

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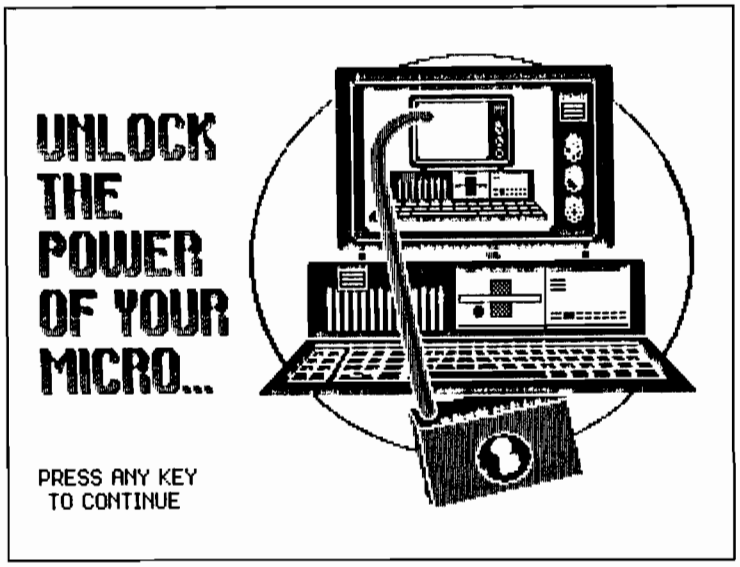

Fig. 3. Notice the slant to the keys in this display, giving us the impression of being very close to the keyboard. Copyright 1985 Educational Technology, Ltd. Reproduced with permission.

to see in this reproduction the shading technique Tritch used to give the rope a sense of roundness, but the white dots on the underside of the rope provide some feel for it. In the limited graphic world of a four-color, medium resolution screen, Tritch relies more on textural than tonal differences to shade his graphics. Texture is created by painstakingly adding dots to the picture in different colors. In the craftsman's hand, the juxtaposition of different colors can be used to achieve a surprisingly large variety of textures and, consequently, a good-looking graphic that is head and shoulders above a simple line drawing.

The application of texture using this technique is shown more clearly in Figure 2. This screen is one of many striking graphics in a demonstration program developed by Jon Hall of Educational Technology, Ltd., of Bedford, England. Hall created this graphic using *PC Paintbrush* developed by ZSoft Corporation and available from IMSI Software Publishers of San Raphael, California. *PC Paintbrush* itself sells for about $200-$300, but you need either a mouse or a graphics tablet to use it effectively. Hall prefers to draw in *PC Paintbrush* using a mouse, as do both of the other graphic artists I know who have used this program, but Hall admits that his preference in human interface has as much to do with what he's used to as anything else. For the record, IMSI sells a very attractively priced package by Summagraphics Corporation of Fairfield, Connecticut, that bundles an industrial-quality graphics table with *PC Paintbrush* for either $400 or $700, depending upon the size of the tablet.

Figure 2 clearly demonstrates Hall's craftsmanship, even when reproduced in black and white. His use of texture accents both the hand and the ball joints, as he creates an Escher-like image to title his "portfolio." Hall's use of texture continues throughout the demonstration, as shown by the text in Figure 3. Notice the perspective on the keys in this display; those on the left are slanted to the right, while those on the right are slanted to the left, giving us the impression of being very close to the keyboard. This second sample of Hall's work shows what can be produced when tools like *PC Paintbrush* are placed in the hands of a true artist. Please note once again that only the graphics shown in Figures 2 and 3 were created using *PC Paintbrush*; Jon created the text using an independent font editor.

From the three screens shown thus far, you might get the impression that high-quality graphics are useful only in title displays. Figure 4 should dispel this impression. Here we see a reproduction of a voltmeter designed by Wendy Israelite of Scientific Systems, Inc. in Cambridge, Massachusetts. Like Hall, Israelite used the built-in *PC Paintbrush* fonts to label some of the meter switches. Hall's graphics are certainly more striking, but they are used outside of any instructional context. Israelite's graphics are an integral part of an instructional program on troubleshooting a tank's firing circuit's subsystem designed by her husband, Dr. Larry Israelite, also of Scientific Systems, Inc. Although Wendy's graphics appear more constrained, the craftsmanship is still present as she shades using texture and color to differentiate switches in the ON (depressed) position—the first and last ones in the top row and the fourth one in the bottom row—from switches in the OFF position (rising above the plane of the meter).

An earlier version of this program ran under TICCIT, a large multi-user system developed at Brigham Young University and now marketed by Hazeltine Corporation. The TICCIT version used a light pen and allowed trainees to point to the switch they wanted to press. Scientific Systems asked me to help them implement another version of the program on an IBM PC, allowing trainees to indicate points on the screen without using a light pen. This accounts for the small pointer that appears above the first switch in the top row. Trainees move this pointer using the keyboard's eight directional arrow keys. My program

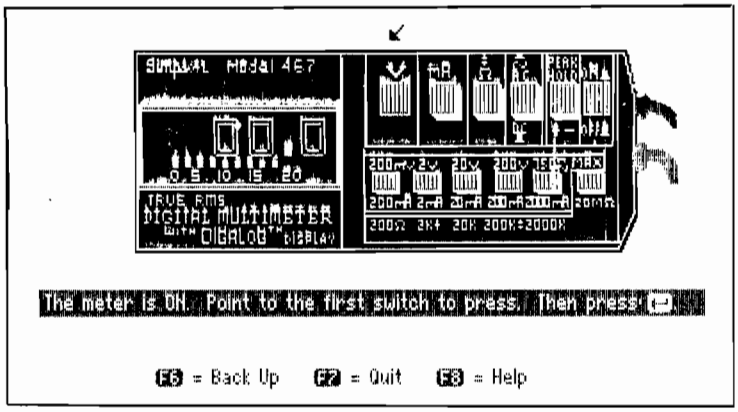

Fig. 4. Wendy Israelite uses texture and color to differentiate switches in the "on" or depressed position. Copyright 1985 Scientific Systems, Inc. Reproduced with permission.

tracks the trainees' keypresses and provides an appropriate error message if they point to the wrong switch to press. When the right key is indicated, this display is overlaid with another of Wendy Israelite's *PC Paintbrush* graphics which shows the indicated key depressed and the previously depressed key popped back up. In addition, the new graphic changes the digital readout in the numeric field at the center left of the meter. This ability to overlay complex graphics greatly enhances the versatility of using such graphics in a dynamic manner within instructional sequences.

The only prerequisite for working with graphics of the type I have discussed is the ability to see. In March, I'll highlight the work of Paul Blenkhorn of the University of Birmingham, England, a true craftsman at creating CBT for people whose ability to see is impaired—the visually handicapped. Once again, I invite readers to bring other talented developers to my attention so that I may highlight their work in this space and so that we may all learn from their creativity. □