

Some Recent Thoughts on Digital Media

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SOFTWARE IS A TREE

One could argue that the universal language of mathematics and its intrinsic relationship to digital media could only result in a universal language of expression. Today designers worldwide use digitally identical tools to create work that services the entire world and thus the proof appears complete. However, the reality of digital media systems is that the complex weave of programming codes bears the culture-specific imprint of the humans who designed and implemented its digital structures. The presumed purely logical structure of a computer program hides a series of unsolved problems and a great deal of character left by its creator. These completely human imperfections inevitably mandate the true capabilities of a software system.

Software is best thought of as a tree of logic, as diagrammed in a simple fictional program in Figure 1. At each juncture, starting from the root of the tree, the computer makes a decision based upon some input that leads its point of view to a new juncture, and so on. As the computer traverses this structure, the user sees new visual elements such as a dialog box or a change in her document, which in turn elicits a response from the user which moves the computer further through its tree of logic. Each branch of logic is put in place by a human hand (the programmer's) with the purpose of allowing greater flexibility for the user's input that can result in a wider spectrum of outcomes.

Thus when looking at the trees around my backyard, I often see programs that I know. A small, scrappy tree I recognize as an early version of Photoshop, say Version 1.0 as in Figure 2. There is not much capability as exemplified by its few set of branches. Furthermore the small scale of the tree signifies the fact that I might be able to understand the entire program. The tall oak tree beside my shed is clearly Photoshop all grown up. There are

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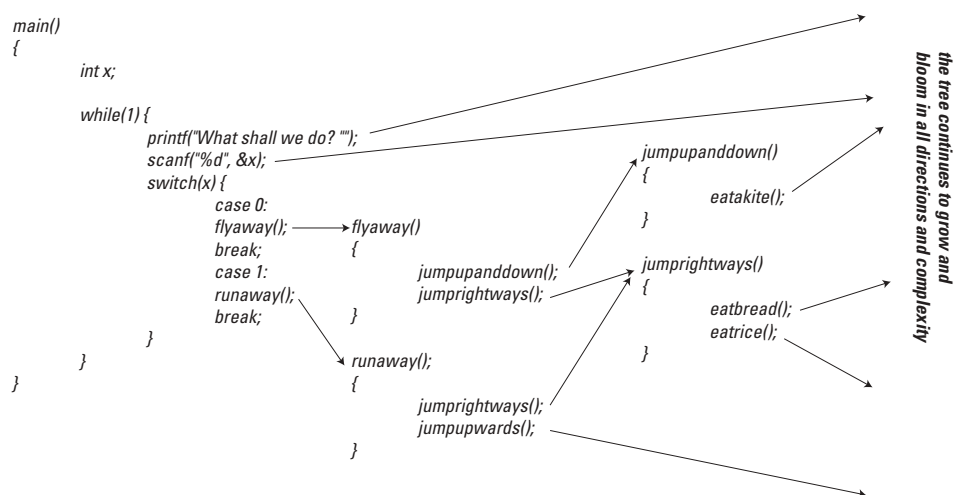


Figure 1



Figure 2

three extremely thick branches that I recognize as the key features that I use such as resize, crop, and blur; the rest of the branches are thin and unusable much like the twirl, glow, or frazzle features that I would never use. The grand scale of the tree is such that it exceeds my entire field of vision and exemplifies the futility of trying to ever completely understand something that is so complex – much like my feeling when I see the giant manuals for Photoshop 6 that I know I will never be able to read. Couple this metaphor with the fact that the software trees are manmade and you begin to see the screws that bind each branch together, ever so precariously. It is no wonder that the tree doesn't fall apart. But it does when the program crashes for some unforeseeable reason.

Once software can be recognized as these magnificent, yet fragile manmade systems of logic machinery, and we can see that using a software package entails travelling the discrete branches of the tree, a fundamental realization can occur. If originality is defined as being 'out of the box' or in general out of the range of what can be possibly imagined, and if using a digital tool places you directly on specific branches of the tree, then all at once you realize that there is no way to get off the tree and be free to be truly original. A common example of this phenomenon is the ubiquitous Adobe PostScript language for defining graphics on a page. PostScript lies at the heart of the desktop publishing revolution and was the result of years of computer graphics research and interest by its inventors in modern graphic design. However for years all digital tools built around PostScript suffered from the inability to render transparency. Only by writing your own software could this inadequacy be averted – in other words you would have to grow your own tree.

A future where designers are free to author their own software, or even modify existing software, seems out of reach today due to the complex nature of programming. However in the realization of this unlikely possibility, it will be possible for designers to define the trends now rather than wait for industry to define the terms of an evolving expression. As new releases of software begin to look like re-runs and Frankenstein-like mixtures of existing systems into new systems, there is now more than ever a need for the field of design to concentrate on the redesign and redefinition of digital expression systems.

ARE YOU A TECHIE OR A CREATIVE?

In the last decade, I often heard directors at Web companies refer to their 'techie' staffs and their 'creative' staffs. Often each side disliked the other, and I would hear of the cultural differences that separated them, ranging from style of dress to preferences in flavors of ice cream. I didn't think much of this until my students began to look for jobs and were forced to choose either the techie or the creative career path – never both at the same time. Until recently, I thought that these distinctions had disappeared. But last month I received an e-mail from a British student proclaiming that she is a 'creative' person trying to reconcile herself with technology. I find it strange that a technical act cannot be creative, and that a creative act cannot involve technology.

My most significant indication of society's predilection for the segregation of creativity and technology occurred on a recent plane flight during which I discovered a magazine article on left-brainedness and right-brainedness. The author struck an authoritative note in the discussion of dominance in either the left brain (logical) or the right brain (visual/spatial) – seemingly a medical fact. If our society is fed physiological discussions of the limitations of humans to achieve balance in left- and right-brainedness, it is no wonder that the techie/creative distinction is commonly held.

I believe that an aversion to computers lies not in the mind but rather in the body, due to the odd demands that a computer exacts on its human subject. With daylight still the stronger source of light, a computer's monitor is always better viewed in darkness. Computer labs in schools rarely have windows – and when they do, the shades are usually drawn. The computer also generates an incredible amount of heat. Heat generated by a small cluster of computers often leads to a situation of discomfort in the average school, which cannot afford air-conditioning (Figure 3). Without a fundamental positive environmental change in the way that humans interact with computers, there will be few Romantics who will take on the computer.

There is also a sense of futility that comes from engaging with the computer's furious pace of development. I know from personal experience that keeping computers working properly is easily a full-time job. With each software install or update you risk losing days of time, because of some odd glitch that will occur and render your entire system inoperable. The regular purchase of upgrades in hope that the software has been properly debugged always results in the realization that even more bugs have been introduced. Recently, even the simple task of turning the computer off often ends in its refusal to shut down. The term 'computer user' makes you wonder if it is actually the computer using you instead of the other way around.



Figure 3

BAUHAUS UTOPIA

The Bauhaus has always been a useful ideal in which to place one's hopes. In my most recent Bauhaus historical expedition, I found a disturbing fact. We all know the Bauhaus for having brought forth the integration of craft and form to realize the betterment of objects worldwide through its unique educational programs. The manner of education focused upon each course having two masters, one the master of form and the other the master of craft. Through the unique strengths offered across the two instructors, and the ensuing interactions with the students, an unparalleled integration of mind and hand was able to occur in a single course of instruction. However once the Bauhaus began to produce graduates, the graduates were hired on as faculty. These hybrids were referred to as the 'junior masters' and the masters of form remained as the real 'masters.' However with the introduction of the hybrids, the masters of crafts were gradually phased out of the teaching ranks. There is no reason given, yet I can imagine the primary reason being simply the political reality that academic survival mandates the survival of the learned mind, rather than the learned hand.

I have always been skeptical of any digital media guru that cannot produce off the top of their head the simple codes of a basic Web page. However I have found that this situation is indeed the norm. I am told that it does not matter. I know that students do care. Not unlike the time of the Bauhaus, the hybrids of today are still the students, and the teachers are the masters. The system is designed such that the hybrids can never become the real masters during the lifetime of the existing masters. Meanwhile the masters of craft are the programmers and electronics hackers who are hidden in the rooms without air-conditioning. Once happily resigned to secondary citizenship albeit with more than adequate six-figure remuneration, we are now finding that the masters of craft want an equal place at the table. This fact probably disturbs many people who reside solely in the field of design. It should.

At the same time, there is a slow and steady flow of masters of form invading the mastery of digital craft. If this flow can accelerate over this decade, as I mentioned earlier I aspire to see happen, we will see a gradual humanizing of technology that is dearly missing. I believe that the cross-cultural interchanges in design and technology are extremely healthy and should by all means be promoted to be the dominant mode of educating the new digital designer.

People often tell me that the mode of hybrid creation is inefficient, and that working in teams is the only proven way to realize quality at the speed that industry requires. I understand these important constraints, yet my only reply is that for a person to realize a lifetime of creative output, they need to be able in the real world to construct that which they think in their head. Otherwise they cannot truly be free.

I never understood the Bauhaus as I do now, but from the beginning of my consideration of digital technology I did believe in the possibility of merging the hand and mind. For that reason I formed the Aesthetics and Computation Group as an experimental studio where individuals are wholly responsible for their creative output. From soldering circuits, to writing codes, to pedestrian information design, and to situating their work in the culture of humankind – they are independent thinkers who can create with their hands at the speed of their thoughts. I have found this model to be quite successful in some cases, a failure in others. However I am most proud that some of the graduates have chosen to educate more individuals in the freedom of expression that only a true hybrid can understand.