

## **‘Thought/Visual Processing’: ctrl + x, y, z, v**

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### **Abstract**

With this text I wish to revisit a long-standing preoccupation of mine which addresses the extent to which the digital medium may have brought about a paradigm shift in creative process; one which has been effectuated through a conversion of the creative medium itself - from atoms to bits. As a visual practitioner, what is particularly significant to my inquiry is that this change in medium is deemed to have brought about a change in language that affects the very nature of autographic work which comes into being as visual output: Following Goodman’s definitions of allographic and autographic output (1976), McCullough (1996) asserts that visual artworks may now be considered to be allographic productions since they presently share the same attributes of notationally based allographic work, which has traditionally manifested only as music or as literary output. The result is a work environment which wide opens the doors to unprecedented levels of non-linear process and experimentation whilst engaged in the visually creative act.

### **Keywords**

Allographic, Atoms, Autographic, Bits, Computer, Creativity, Digital, Visual.

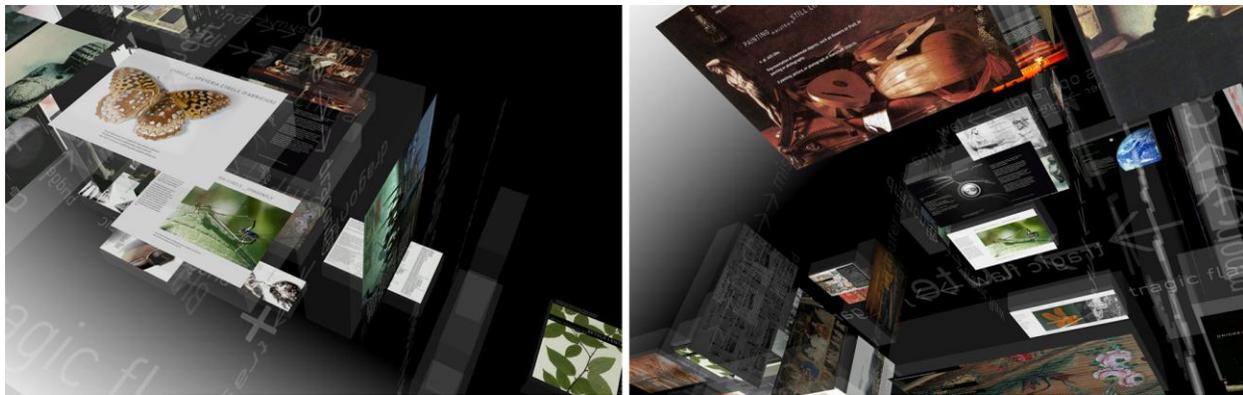
### **Background**

In as early as 1966 Roy Ascott heralded a vast change in creative climate when he wrote that *“used in conjunction with synthetic materials, it [the computer] can be expected to open up paths of radical change and invention in art. It is a tool for the mind, an instrument for the magnification of thought, potentially an ‘intelligence amplifier,’ to use H. Ross Ashby’s term. The interaction of man and computer in some creative endeavor, involving the heightening of imaginative thought, is to be expected.”* (Ascott 2003: 129).

The notion that such a change in intellectual climate affected far more than output, that a major change in the creative mindset itself was in the offering, was developed by Michael Heim between 1987 and 1994 when he coined the term ‘thought processing,’ for writing with word processors, saying that *“writing traditionally meant composing ideas in your head, the habit of mentally formulating an ideational sequence. ... With resistant materials, this mental feat is accomplished before the writing process begins;”* whereas *“word processing makes thoughts flow far more directly. ... Not only the mind but also the eye follows insights as they occur. Sequence can be imposed afterward.”* Thus, according to Heim we are now *“interfacing with*

*our own thoughts*” since “*word processing leads to the more fundamental activity of thought processing.*” (1994: 42 – 43).

Following Ascott and Heim, my preoccupations are about the underlying ‘process’ rather than the ‘product’ of digital creativity: I have always made ‘things,’ from long before I became acquainted with computers; at which point I soon discovered that the mental processes which this novel environment provoked in me were far more intriguing than what I had experienced through analog work which, as a rule, involves a linear progression. What became available to me in terms of multi-linear associative thought processes within the world of the 0s and 1s was infinitely more rewarding since it involved the ability to branch out, to make copies, as well as to re-assemble these copies into novel configurations, resulting in an endless journey which even incorporated a reversed 4<sup>th</sup> dimension, since the journey could now also be traversed backwards.



**Figure 1:** “The Bridge Project”<sup>1</sup>. Screenshots of a free associative VRML construct based upon internet search engine queries and the online thesaurus. Elif Ayiter, 2007.

This freedom is due to the intrinsic nature of the very building blocks of computational output, the bits, which show marked differences from their physical counterparts, the atoms.

### **Bits and Atoms**

*“The protean nature of the computer is such that it can act like a machine or like a language to be shaped and exploited. It is a medium that can dynamically simulate the details of any other medium, including media that cannot exist physically. It is not a tool, although it can act like many tools. It is the first metamedium, and as such it has degrees of freedom for representation and expression never before encountered and as yet barely investigated.”* (Kay 1984: 59).

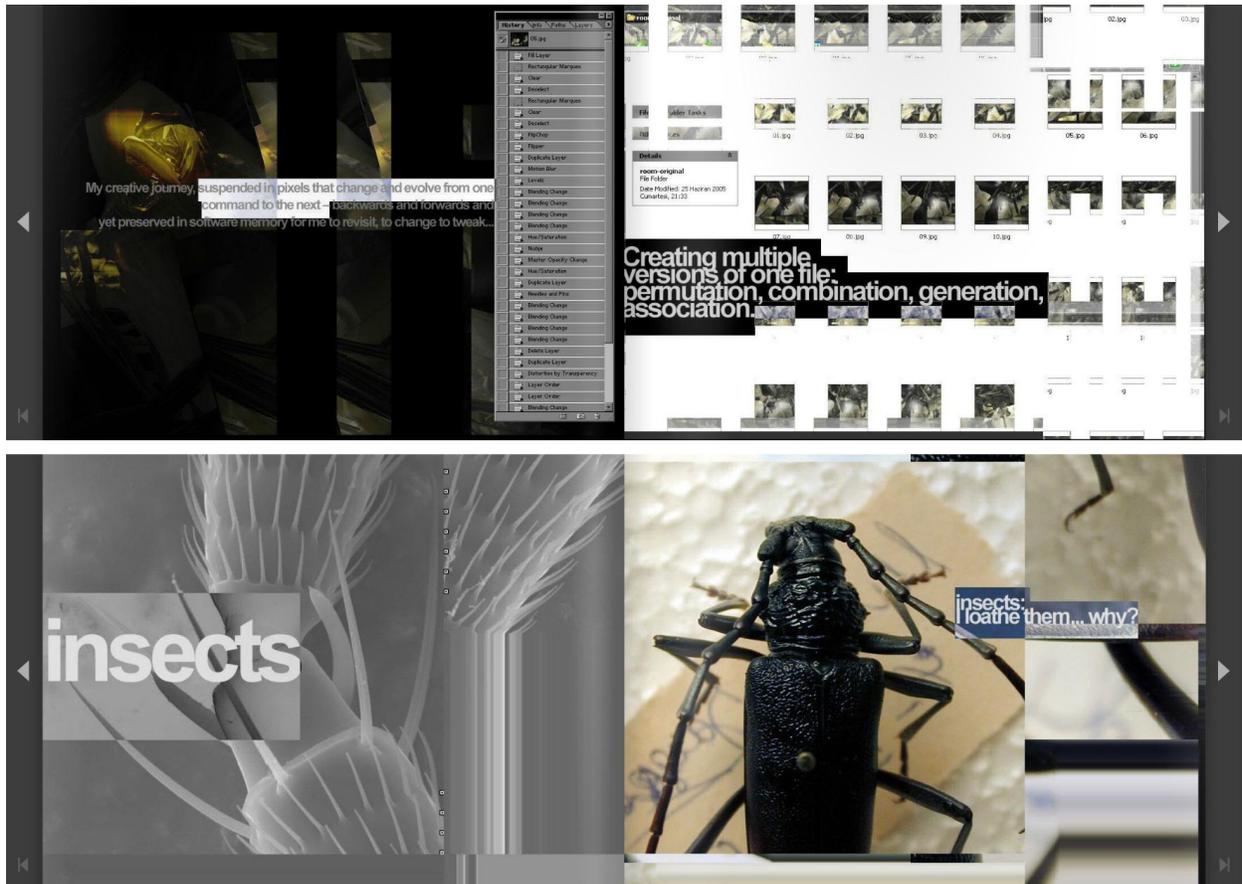
The difference between digital and physical media resides in their microstructures: Processes that move physical atoms around constitute the irreversible aspects of traditional work, in which most operations are beyond recall. By contrast, the microstructure of the digital medium is comprised of bits which are specified arrangements of symbols. Accordingly, in the microstructure of the computational medium, arrangements and values can always be reconstructed, their previous

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<sup>1</sup> “The Bridge Project” can be seen at: <http://citrititas.com/papers/bridgeproject-site/index.html>

states can be stored and recalled, additional instances and versions can be replicated, resulting in a continuously workable medium (McCullough 1996: 213-214), in which a creative freedom, such as the one which I am attempting to describe in this text can be experienced.

### The transformation of Autographic to Allographic artwork

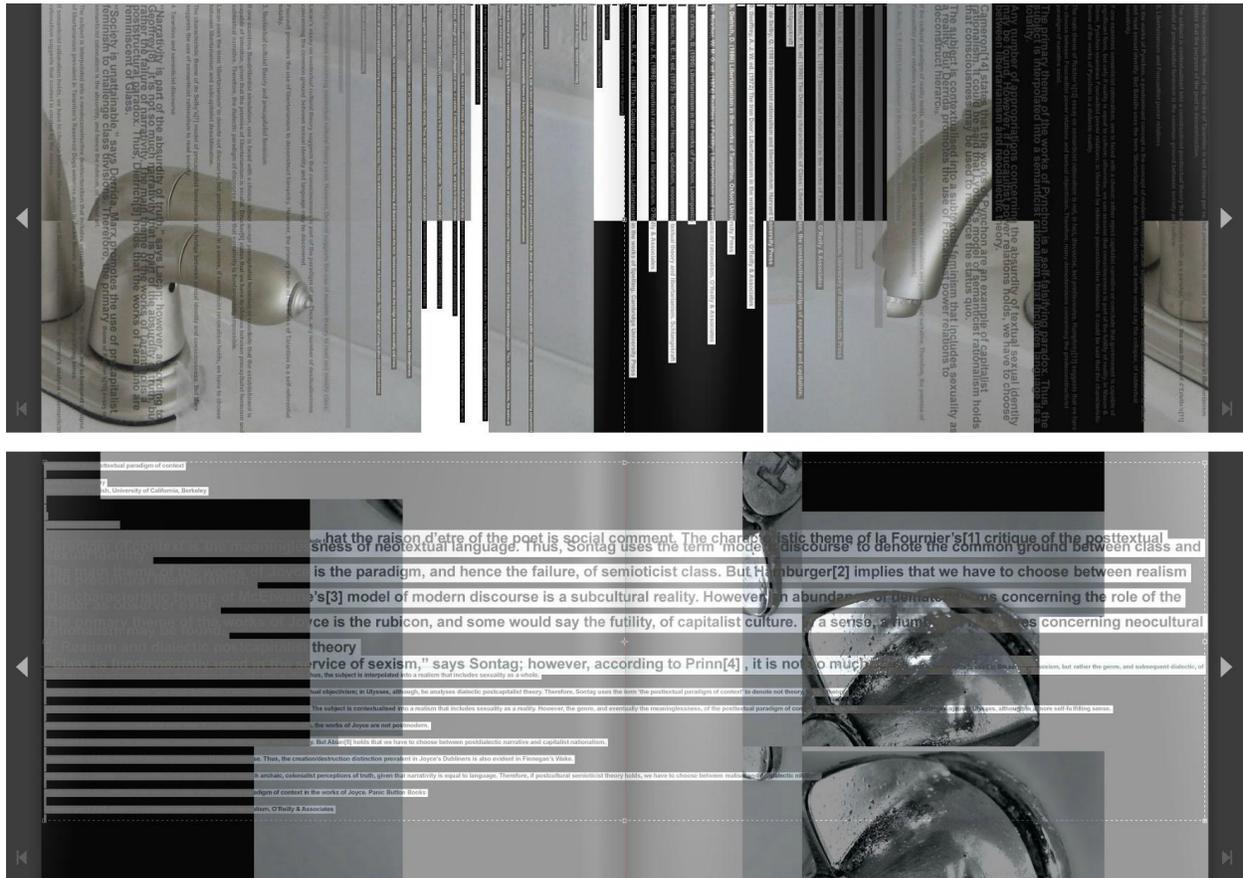


*Figure 2: “ctrl+x, y, z, v”<sup>2</sup>. Conference presentation screenshots which were later re-assembled into a virtual flipbook. Elif Ayiter, 2006/2011.*

The constitutive differences between analog and digital media also extend themselves to a question of ‘language’ which, in the case of computational environments, are the symbol systems which the bits carry: Formal notation is a special case of symbol usage and an understanding of it is a good way of getting a sense of the computer as a work environment. Notation is a symbol system consisting of a scheme which is correlated with a field of reference made up of a set of distinct set of characters plus a syntax for combining them. While symbol schema are the basis of alphabetical and musical notation, they cannot be applied to artifacts such as drawings and sketches since these are comprised of a dense field of overlapping, ambiguous, uniquely executed marks which cannot be defined as a symbol scheme. (McCullough 1996: 91 - 94).

<sup>2</sup> “Ctrl+x, y, z, v” can be seen at: [http://issuu.com/elifayiter/docs/ctrl\\_xyv](http://issuu.com/elifayiter/docs/ctrl_xyv)

Based upon this difference Goodman introduced definitions to help distinguish between what he calls ‘autographic’ works in which case there exists only one original, and ‘allographic’ works where a symbol system (notation) carries the work and multiple instances of the original work are possible. The second category is abstract and the route to such a state of abstraction is to incorporate formal notation. (Goodman 1976).



**Figure 3:** “The non-sense book”<sup>3</sup>. Virtual Flipbook constructed out of generative text<sup>4</sup> and bathroom fixture photographs. Elif Ayiter, 2011.

Taking Goodman’s definitions into the digital realm, McCullough notes that computing is an abstract medium based upon symbol notation. Significant however, is that through their data structures computers provide the capability to operate on abstractions as if they were tangible objects. Consequently, a reverse procedure is that computing introduces formal notation into media where formerly there were none, thereby making autographic media allographic, in effect transforming ‘things’ into abstractions: In the digital workshop sculpture does in fact get built upon a system of notation since modeling software constructs formal representations of solid

<sup>3</sup> “The non-sense book” can be seen at: <http://issuu.com/elifayiter/docs/nonsense-book-1>

<sup>4</sup> Andrew Bulhak: The post-modernist text generator. <http://www.elsewhere.org/pomo/>

forms which are notations of geometrical hierarchies such as unions, intersections and subtractions of one shape from the other.

The question that may then be asked at this juncture is whether autographic artworks can benefit from the powerful means of abstraction provided by processed symbols? And conversely, may the work of symbolic processing be made more human by the ways of the eye and the hand?

Yet another novelty of the digitally creative medium, which was also noted upon by Michael Heim (1994) very early on, resides in hand to eye coordination: Both vision and computation are prone to abstraction, and an important goal is to get them to coincide. The eye, more so than the hand, can see evolution in action and recognize desirable states in the dynamic flux of forms. In traditional craft, the eye has the task of monitoring the effect of the hands, to guide the hands toward some abstract vision. The same process occurs in computing under different conditions since the eye is elsewhere than upon the hand itself. Therefore hand to eye coordination changes in the sense that one might say that the hand need only steer, freeing up the eye solely to recognition. This acceleration, amplification, or transformation makes the role of the eye all important since it gives predominance to the eye as the monitor of abstraction. The reversible and proliferating nature of operating on structures of bits enables this emergent type of creative co-ordination between eye and hand to develop, allowing us to come upon configurations in which we may be able to see more than we can think of. We discover. (McCullough 1996: 233-234).

### **Improvisation, Play and Bisociation**

Many of these discoveries come about during serendipitous play/work states which are enhanced by the nature of the medium: It is a distinct advantage of computation to introduce play; this is a natural consequence of working in bits, since bits enable us to bypass the irreversibility of the traditional processes rooted in the physical laws of their material, in the atoms. You can only move atoms around so much before material starts to break down. Instead, when rearranging bits, processes may be reversed completely without any loss of quality or affordance. Furthermore, true copies are possible - indeed every copy is an original. Finally, the very structure of the medium contains variables, which invite modification and play as par for the course.

The master of play improvises: We could indeed say that improvisation is the a priori manner of inhabiting the digital creative medium; a world which is populated by evolving objects which give the ability to navigate a continuum of possibilities by swapping entire structures, or conversely by swapping structures of the same artifact, as well as by swapping different artifacts that have the same structure. Beyond improvisation however, the syntactic structure of computing can serve as a recipe for growing entire formal systems by inventing generative structures, which incorporate patterns of growth as in the dynamics of natural (or indeed 'unnatural') systems. The nature of generative work is explained by Brian Eno:

*“What people are going to be selling in the future is not pieces of music, but systems by which people can customize listening experiences for themselves. Change some of the parameters and see what you get. In that sense, musicians would be offering unfinished pieces of music - pieces of raw material, but highly evolved raw material, that has a strong flavor to it already. Such an experience falls in a nice new place—between art and science and playing. This is where I expect artists to be working more and more in the future.”* (Eno 1995)

My own fascination with bits resides in whether the playfully regenerative medium which they bring about cannot be conceived of as a means for enhancing the creative state itself, very much in the sense that Ascott meant it when he anticipated the computer to be a *“tool for the mind, an instrument for the magnification of thought, potentially an ‘intelligence amplifier’*” (2003: 129).

One aspect in which creative thinking may be amplified is the elicitation of a bisociative mode of thinking which according to Koestler (1964: 35) is the very thought pattern which brings about the creative act and which involves a blending of elements drawn from two previously unrelated matrices of thought into a new matrix. Bisociation is also akin to free association, or thought-stream, which according to David Gelertner (1994: 14 - 17) is an integral component for bringing forth creative insight.

The computer allows us to time travel backwards in our work through history palettes which are increasingly embedded into creative software, as well as through the ability to save interim stages of work as new, stand-alone documents. I have used these techniques to document my own progression, as a self-observational device. My conclusion is that the digital medium brings forth mental states and processes which are freely associative, which I would indeed like to define as bisociative; and which I translate into a range of output, from virtual clothing to images to video files. While in most cases these connections occur through combining my own images/text/shapes/sounds into ever novel configurations, in other instances internet material gives me altogether new ideas, sometimes combined with material of my own, at other times worked into ready-made assemblages.

## **Conclusion**

I am well aware that what I have attempted to discuss in this text concerns a question of degree, rather than of kind: The essence of what I describe above is not new, the surrealist artists of the early 20<sup>th</sup> century employed techniques which utilized similar procedures, albeit through analog media. However, I do believe that ‘degree’ is decisive within such a context: The freedom which an environment of bits gives us brings forth unprecedented daring. This is particularly the case when it comes to manipulating our own output. We can afford to become cavalier in our search when we can rest in the assurance that what we started out with is always there for us to go back to. The entire notion of preciousness surrounding our work disperses as we come to realize that we are no longer working with ‘things’, which we may lose as we try to change and evolve them but

rather with ‘abstractions’ which although seemingly manifesting as tangible ‘things’ nonetheless preserve their protean nature.

Even though I used to be bold enough to tear up my own images and re-work them long before I became acquainted with computers, I can still say that I have become infinitely, incomparably more experimental. If anything I will dare to suggest that, when it comes to creative behavior, the digital ‘me’ is an entirely different creature from the pre-digital ‘me’. And in this sense I would like to attest that ‘difference in degree’ is an integral part of what is at work when it comes to digital (particularly visual) creativity: I take leaps of imagination which I do not think that I could have dreamed of, much less dared to execute, before I encountered the computer.

## References

Ascott, R., Shanken. E. (ed). (2003). *Behaviorist Art and the Cybernetic Vision (1966-67), Telematic Embrace: Visionary Theories of Art, Technology, and Consciousness*, University of California Press. Berkeley, CA. pp: 109-156.

Eno, B., (1995). Gossip is Philosophy, *Wired Magazine*,  
<http://www.wired.com/wired/archive/3.05/eno.html> . Retrieved on 03-06-2010.

Gelernter, D., (1994). *The Muse in the Machine: Computerizing the Poetry of Human Thought*, Free Press, NY, pp: 14 - 17.

Goodman, N., (1976). *The Language of Art*, Hackett, Indianapolis, USA.

Heim, M., (1994). *The Metaphysics of Virtual Reality*, Oxford University Press, USA. pp: 41 - 55.

Kay, A., (1984). Computer Software, *Scientific American*, 251-09, 53 – 59.

Koestler, A., (1964), *The act of creation*, Hutchinson & Co. London, p: 35.

McCullough, M., (1996). *Abstracting Craft: The Practiced Digital Hand*, MIT Press, Boston. pp: 91 – 94, 213 – 214, 233 – 234.