CAMERA, CANVAS, AND COMPUTATION: NEW FRAMEWORKS FOR REPRESENTATION AND ABSTRACTION

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Visual computing has irrevocably blurred the lines between representation and abstraction. Just as photography with its innovative realism changed the nature of painting, so digital image capture and computational creative processes are changing the relationships between previous traditional art media and directly influence our frameworks for creating and interpreting new media works.

Vacation Meditation, 16.5"x12.5" unique inkjet print, 2011. Collection of Genevieve Keeley.

Introduction
The relationship between abstraction and representation is a relationship of language to silence, of the recognizable to the wordless and experiential. Both art genres evoke an emotional response; both approaches have known histories and structures. They exist at opposite poles of the art magnet, however, and there is sparse middle ground. Either an image resolves perceptually into something recognizable or it does not. The brain seeks familiar cognitive objects - and may find something the artist did not intend - but a millisecond is enough to know whether a work is a picture "of something" or not.

The abstract can be seen as a categorical subset of representational work, as all the features of abstraction are contained within a representational work: composition, color, line, gesture, mark making, form, etc. Any representational work can be processed to relieve it of its burden of language and reveal the "abstract" features that contribute to the composition and mood.

The two genres are usually distinct from the beginning to the end of the creative process. It is rare that a traditional artist sets out to create an abstract work and ends up with a realistic picture - or vice versa. Some works can function on both levels giving each equal due, as maybe Pointillism does or some more extreme Cubism. Either genre can comment on virtually anything from the personal to the political - as artists from Motherwell to Malevich can attest.

The invention of photography had a profound effect on the goals of painting: the technical challenge of representation had been met. The documentary aspects and mathematics of perspective no longer had the same visual power in a painted work. Representation did not go away, as some had predicted, nor did the art of painting, but the focus shifted, bringing abstract qualities to the fore.

The invention of computers has brought about another change, just as significant, if not more so, and has brought things full circle. The computer does not treat pixels in an image of a face any differently from those in a red square. Although image processing algorithms can recognize faces and other objects these are still human constructs realized with code. The computer doesn't care or make these distinctions, all the data is the same - just as a realistic or abstract painting begins with the same tubes of colored paints.

In my artwork, the computer has afforded a new way of working with imagery and mark-making that transforms works from representational to abstract in a way impossible with traditional media. In recent works, I have been able to integrate digital photography, traditional drawing and painting, and 2D, 3D and motion-based computational effects to make works that combine the visceral impact of traditional physical techniques with the compositional complexity and perfect ordering made possible by computation.

The Working Process
For example, on a vacation in Jamaica, I took a digital of our hotel pool. Back in my studio in Pawtucket, RI, I used this as a reference for a pastel drawing. From the photo, I derived instant perspective and was able to recreate specific details of palm fronds and pool lighting. The pastel drawing is not a photograph replicated by hand but uses details that would be otherwise forgotten as a jumping off place for constructing a composition loaded with internal emotional and personal experience. These are conveyed through the use of gesture and color and, of course, the choice to include certain details and leave out others. I was fascinated by the artificial color of the pool water and its strict rectangular geometry in an otherwise natural setting and used this to construct an image that contrasts technology and nature.

The results, in part because of the digital photographic influence, employ a Western style of image-making, resulting in a representational work using standard perspective and other spatial cueing techniques such as color warmth, overlapping, and scale. The aspect ratio and field of view are also influenced by the digital course.

After completing the traditional drawing, I took a high-resolution digital photograph. Now the bits were in my computer, and became plastic again in ways not possible with the drawing hanging on the studio wall. In a single keystroke I switched polarities and entered the world of abstraction. My goal was to bring a type of Eastern, patterned, mathematical compositional strategy into play, without sacrificing the original mood of the piece. In other words, I wanted to use the computer to take the work someplace new, building on the original effort but using the computer to explore territories not possible with my wooden case of pastel sticks. (See Fig. 1.)

As a math major in college and a lover of Islamic art, I have always been fascinated by the power of patterns to describe space and transcend the everyday world, suggesting a higher order. The circular kaleidoscopic algorithm I used let me bring all these factors into play without letting go of the visceral mark-making and human touch that comes from drawing by hand. I created a series of images, that varied the role of the pool and its artificial coloring and that of the greenery growing around it. I was also intrigued by the level of complexity so easy afforded by the computer and its affect on the feeling of the work. The resulting works bridged cultures and received attention in Middle Eastern publications such as Vision magazine, The International Herald Tribune, and on Dubai One TV, as well as in the US. [1][2][3][4]

After experimenting with the compositional options I moved further into the computational realm by creating time-based works based on the same strategies. The sense of space and potential for motion in my work is an important aspect for me and setting the kaleidoscope in motion I was able to bring back the feeling of experiencing a space—not a traditional Western one anymore, but an idealized sensorium. By controlling such aspects of the center point from which the algorithm worked to the number of branches, scale and rotation, and movement speed, I could explore this new computational space interactively and choose the images and sequences that best conveyed my goals for the work.

I am continuing this exploration in new work, combining abstract patterning with recognizable objects that come and go during the piece. For example, in kaleidoscopic works based on video shot of highway traffic from a small plane, I am playing with patterns formed by the abstract semiotics of the highway - white dashed lines, solid yellow ones, signage, etc. - combined with recognizable portions and patterns of vehicles that emerge, rush by, combine or splinter, and disappear.

Conclusion
From the original digital photo through traditional processes and back to the computer in both still and motion-based contexts, I was able to explore an aspect of the external landscape that intrigued me and bring my internal emotional response into the work in a variety of ways. The abrupt shift from representational to abstract made possible by the computer is, I believe, indicative of the ways in which the computer continues to change the process of art making and interpretation.

References and Notes:

1. Mazria-Katz, Marisa, "Creative Force," Vision: Fresh Perspectives from Dubai, Issue 03, July 2011: 59-61.

2. Advertising Supplement, "The Art of an Emirate," International Herald Tribune, Thursday, July 21, 2011.

3. Channel Dubai One, Studio One show, Episode 54. March, 2011.

4. Greg Cook, "Review: Leitzel and Billings at AS220; and 'Creative Collective'," Providence Phoenix June 17, 2011: 19