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**Paper : CRUFT: Recent Explorations in Indeterminacy, Materiality and the Ephemeral in the Age of Mobile Media**



**Topic: Computational Art and Algorithms**

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**Abstract:**

CRUFT are images created by automated computer scripts that first download source material from the Internet, and then process this information, generating new art work 24 hours a day, 7 days a week. Beginning in 2003, early versions generated CRUFT images from the digital leftovers of the main stream media news sites using indeterminacy, genetic algorithms and the use of feedback systems. Recent work has explored the ephemeral nature of digital images in the age of mobile media.

This paper will look at the recent development of the democratization of image making and sharing through the use of mobile media, such as Twitter, Instagram and Youtube. I will briefly look at the history, and aesthetic implications of using indeterminacy and real-time systems in both the arts and sciences. I will then outline some of the aesthetic issues explored in my most recent generative art I call CRUFT, which are created using source images downloaded from the vast database of mobile media now on the Internet.

This code based art resulting in CRUFT is important because it brings into question our assumptions about the use of indeterminacy in the creative process, as well as the materiality and ephemeral nature of the aesthetic experience.



**Placebo Cruft**

(*Reparation for Events Real and Imagined*)

<http://www.robertspahr.com/work/placebo/>

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# **CRUFT: Recent Explorations in Indeterminacy, Materiality and the Ephemeral in the Age of Mobile Media**

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## **1. CRUFT: Generative Art From Digital Leftovers**

In 2003 the main stream media's portrayal of the United States going to war in Iraq was presented as an inevitable event, which caused me to feel much frustration and anxiety. As the media ramped up it's war campaign, the anti-war effort seemed to dissipate over night. As the 24/7 cable news continued, I began to think about how these digital images operated, one day influencing our thinking, and the next day they would vanish without a trace. I set out to create art on a cable news cycle. I wrote computer code that I could automate, that would remix source images downloaded from the Internet, and would process these images into a digital collage. The digital leftovers reminded me of redundant computer code. Code that was once useful, but later forgotten and obsolete. The code is described in Wikipedia as follows:

Cruft (occasionally kruff) is computing jargon for "code, data, or software of poor quality". The term may also refer to debris that accumulates on computer equipment. It has been generalized to mean any accumulation of obsolete, redundant, irrelevant, or unnecessary information, especially code. An alternative usage is becoming more generalized to refer to any unneeded or unwanted computer hardware or obsolete equipment. [1]

The very first automated script I wrote, using source images from the New York Times website, is called *Hourly Cruft* and has been running and producing new images every hour on the hour since June of 2003. [2] I will now briefly look at the history, and aesthetic implications of using indeterminacy and real-time systems in both the arts and sciences, before I discuss the recent development of the democratization of image making through the use of social media.

## 2. Programmability, Indeterminacy and Systems Aesthetics

Although the printing press in the fourteenth century and photography in the nineteenth century had a large impact on the development of modern culture, the printing press affected only the distribution of media, and photography affected only that of still images. As Lev Manovich states in *The Language of New Media*, "The computer media revolution affects all stages of communication, including acquisition, manipulation, storage, and distribution; it also affects all types of media – texts, still images, moving images, sound and spatial constructions. [3] He goes on to discuss the immediate impact that photography had on society, which I will talk about later in this paper. Manovich makes the argument that the development of media and the development of computers begin around the same time. He describes in some detail the first programmable loom:

Around 1800, J. M. Jacquard invented a loom that was automatically controlled by punched paper cards. The loom was used to weave intricate figurative images, including Jacquard's portrait. This specialized graphics computer, so to speak, inspired Charles Babbage in his work on the Analytical Engine, a general computer for numerical calculations.... Thus a programmed machine was already synthesizing images even before it was put to processing numbers." [4]

The power of automation, as demonstrated by Jacquard's loom, is shown to predate that of photography by almost 30 years. If we now jump to the mid-twentieth century, we will see the beginnings of the scientific discipline of cybernetics, which emerged out of attempts to regulate the flow of information in feedback loops, to predict, control and automate the behavior of machines and animals. Although cybernetics was a collaboration of many, Norbert Wiener coined the word itself, as he states, "Cybernetics, which I derived from the Greek word *kubernetes*, or 'steersman,' the same Greek word from which we eventually derive our word 'governor.'" [5] Cybernetics offered an explanation of behavior within mechanical and biological systems in terms of the exchange of information. Wiener offered the following description:

When the great control rooms at the locks of the Panama Canal are in use, they are two-way message centers. Not only do messages go out controlling the motion of the tow locomotives, the opening and closing of the sluices, and the opening and closing of the gates; but the control room is full of telltales which indicate not merely that the locomotives, the sluices, and the gates have received their orders, but that they have in fact effectively carried out these orders.... This principle in control applies not merely to the Panama locks, but to states, armies, and individual human beings.... This matter of social feedback is of very great sociological and anthropological interest. [6]

Information in a cybernetic system is transferred dynamically and with the use of feedback, that information informs all parts of the system, enabling the whole to self-regulate in order to maintain a state of equilibrium. Wiener also suggests that cybernetics can be applied to more than just industrial systems, but also to social, cultural and biological systems as well.

I now want to turn to Jack Burnham, who in 1968 published the book *Beyond Modern Sculpture*, which attempted to establish a post-formalist discourse which culminated in the exhibition *Software* at the Jewish Museum in New York in 1970. This exhibition contained many examples of Systems Art, which was influenced by cybernetics and emerged as part of the early conceptual art movement of the 1960's and 1970's. [7]

In *Systems Aesthetics* Burnham sketches out a broad paradigm shift within late modern society that is no longer oriented towards material objects, but towards modes of organisational efficiency and utility. The idea of art for Burnham is reconfigured as “a perspectivist considering goals, boundary, structure, input, output, and related activity inside and outside the system. Where the object almost always has a fixed shape and boundaries, the consistency of a system may be altered in time and space, its behavior determined both by external conditions and its mechanisms of control.” [8] Although his art criticism has fallen out of favor, the impact of his work was limited, partially because of his technological determinism. According to Edward Shanken, the *Software* exhibition failed for numerous reasons:

The DEC PDP-8 Time Share Computer that controlled many of the works did not function for the first month of the exhibition due to problems with, ironically enough, the software. The gerbils in *SEEK* attacked each other, a film was destroyed by its editors, and several aspects of the exhibition - including the catalog - were censored by the Board of Trustees of the museum. The show went greatly over budget which put the Jewish Museum in a precarious position financially. The Jewish Theological Seminary bailed it out, but dictated a radical shift in the museum's mission, which precipitated Karl Katz's dismissal as its director and its demise as a leading exhibition space for experimental art. [9]

Burnham's reputation was surely damaged due to this exhibition, as well as him tying the notion of art as a system to a particular type of conceptual art of

the late 1960's and early 1970's. He thus gave his systems aesthetics the same short lifespan of certain kinds of conceptual art.

### **3. From Atoms to Bits, Aura and the Internet**

Today most of us carry a mobile device that connects us to the Internet, allowing us to express ourselves in real time by creating words and images as well as distributing them to a global audience. At the leading edge of the 21st century, more people take more photographs than any other time in history. This is creativity on a vast democratic scale never before seen. The computational device that we carry in our pockets and still call a "phone," gives us the abilities of what twenty years ago required a traditional television studio or the resources of a newspaper publisher, to accomplish. The barrier to entry comes at a low financial and technical cost, allowing practically anyone to capture and edit still and moving images on a mobile device and instantly publishing and distributing creative content to the world. There is no previous socio-economic model to allow so much creativity, by so many people, changing the populations role from media consumers to media producers. It is important to realize that this global network is a gigantic copy machine. To publish to the Internet is to make a copy, and to view content on the Internet, is to make a copy. I want to look at the effects photography has had on our creativity, from the ability to index reality through optical and electronic devices, to the act of capturing moments in time by documenting the present, to the process of creating completely computational photorealistic realities using only software.

Let's look back to the first known examples of media making. A recent discovery dates the earliest cave paintings to be at least 40,000 years old. [10] So old in fact, that archaeologists wonder if a Neanderthal painted them. The images were a form of hand stencils, where a hand was placed against the cave wall, and then pigment was spit or blown onto it. When the hand was removed, a negative imprint remained. Since the time of those first paintings on a cave wall we have had the urge to leave a trace of our presence by making images that document that we existed, and that we had ephemeral hopes, dreams, and fears. These were our original shadows that we left behind on the cave wall.

For most of the past forty millennia artists have made traces with such materials as charcoal and paint, developing observation and technical skills as well as the conventions to represent the illusion of three dimensional space on a two dimensional surface. Optical devices were invented, such as the camera obscura which projected an image of it's surroundings on a flat surface. It was used for drawing and was one of the inventions that led to the development of photography and the camera. The first permanent photograph was captured by Joseph Nicephore Niepce in 1826, using a petroleum derivative called bitumen of Judea to capture light.[11] As the technology improved, indexing reality through a lens led to an existential crisis, calling into question the role of art and the artist.

Jump to the 20th Century, where much of the art of the time largely rejected the goal of illusionistic representations. The creation of illusionism was delegated to optical and electronic devices capturing images of reality in photography, film and video.

Illusionistic representation has become the domain of mass culture and media arts. What became our reality, was a particular linear perspective and depth of field, certain tonal and color ranges, as well as motion blur, which was ultimately created due to the limitations of the camera itself. The camera's representation became our reality, it was not realism but photorealism.

In Walter Benjamin's 1936 essay entitled 'The Work of Art in the Age of Mechanical Reproduction', he discusses a shift in perception and its affects after the advent of film and photography. He writes of the loss of aura through the mechanical reproduction of art. For Benjamin the aura represents originality and authenticity. A painting has an aura while a photograph does not. He states "Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be." [12] The destruction of the aura due to mechanical reproduction signals the transition from artwork as a ritual object, to artwork as exhibited in a museum. The experience of mechanically reproduced images, no matter how perfectly copied, is a missing sense of presence. It is the presence of the object that is it's aura. Benjamin then goes on to say, "Mankind, which in Homer's time was an object of contemplation for the Olympian gods, is now one for itself. Its self-alienation has reached such a degree that it can experience its own destruction as aesthetic pleasure of the first order. This is the situation of politics which Fascism is rendering aesthetic. Communism responds by politicizing art." [13] The attempt of fascism to render politics aesthetic can be seen in propaganda such as Hitler's mass rallies and ultimately in war, as expressed by the Italian futurist F. T. Marinetti, and most recently by the self-destructive aesthetic pleasure one feels watching reality television, and 24 hour, cable news.

In the 20th century art made a transition from an artifact of ritual value to an object on display in a museum. Today we have transitioned from an image as a physical object made up of atoms, to one that is now only software made up of bits. Our visual culture is photographic in its appearance, and generally digital in its form. It is important to realize that all digital photographs as well as all digital information is not just media, but also computer data.

Social media such as Facebook, Twitter and YouTube have us documenting our lives with photos, videos, time lines, and status updates. The time between living an event and documenting an event has collapsed. We live life in a constant state of the present compressed into a soon to be past. If Walter Benjamin's aura is destroyed with mechanical reproduction, sharing a photo on Instagram allows the present moment to be documented as an immediate past event. Adding an Instagram preset, such as a sepia filter makes images look like they are made of atoms with a history and a physicality. This computationally created nostalgia simulates a one of a kind art object that may have been sitting in a shoe box for the past thirty years.

Most photography today never enters the world of atoms, and is nothing more than computer bits existing nowhere and everywhere, displayed upon screens and stored on hard drives separated by large geographic distance. In the age of digital images which can be manipulated algorithmically, the separation between production and post-production has completely blurred. Even our digital cameras perform computational compression at the moment of image capture. With the acquisition of Instagram, Facebook is the world's largest photo sharing site that also happens to be

a social network. Instagram users upload 3,480 photos [14] and YouTube users upload 72 hours of new video every minute. [15] We use screens to look into this copy machine, and consume and produce it's content, atoms have been replaced by bits. As photographers and media makers, we are still adjusting and making sense of this instant documentation and distribution with an art practice that produces bits.

The Internet helps make these digital media objects ephemeral, ubiquitous, easily copied and freely available. Information wants to freely flow everywhere on the network. Unlike traditional art objects, there is no inherent scarcity on the Internet as information gets copied time and again, traveling over fiber optic cables, moving information at literally the speed of light.

Digital technology and this giant copy machine we call the Internet, mirrors our own evolution as a species, and has given humanity a Twittering voice and Instagram eyes to see and change the world. [16]

#### **4. Recent CRUFT: Reparation for Events Real and Imagined**

As I have recently considered Norbert Wiener's 'Cybernetics' as well as the 'Systems Aesthetic's of Jack Burnham, I have become interested in thinking about the Internet as a large real-time database being updated every minute by thousands of mobile media files. This system of input, output and feedback that is really one big copy machine, with each of our hardware devices such as laptop computers, tablets and mobile devices being nothing but a screen looking into the copy machine that is so often referred to as the cloud. These devices allow us to touch this machine and to add our content to the database, sharing our files with anyone in the world who is connected.

As an artist, I want to use these mobile media files as source material. My recent series is building a fictional narrative which I call "Reparation for Events Real and Imagined." I access this source material by automated scripts that search through the interface of Yahoo! Images. I am appropriating these images from the Internet, allowing algorithms to make the selections.

In a similar way Marcel Duchamp set the conceptual framework with his Dada gesture to select everyday objects as art, which he called Ready-mades. My algorithms select with aesthetic disinterest, much the way Duchamp described his own process:

"A certain state of affairs that I am particularly anxious to clarify, is that the choice of these Ready-mades was never dictated by any aesthetic delectation. Such choice was always based on a reflection of visual indifference. And at the same time total absence of good taste." [17]

My search results are then processed using a similar disinterest, made possible by using a process of indeterminacy, the images are then processed with techniques that render the new media objects to take on a similar appearance to certain social media websites such as Instagram. An algorithm processes the image to look like an old polaroid, holga photo, or the effect of chemical emulsion with the texture of paper. These simulations point to an object made of bits, not atoms.



**Anesthetic Craft**

(Reparation for Events Real and Imagined)

<http://www.robertspahr.com/work/anesthetic/>



**Anesthetic Craft**

(Reparation for Events Real and Imagined)

<http://www.robertspahr.com/work/anesthetic/>





**Phantom Limb Cruft**  
(Reparation for Events Real and Imagined)  
<http://www.robertspahr.com/work/phantomlimb/>



**Phantom Limb Cruft**  
(Reparation for Events Real and Imagined)  
<http://www.robertspahr.com/work/phantomlimb/>



**Placebo Cruft**

(Reparation for Events Real and Imagined)

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**Placebo Cruft**

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**False Positive Cruft**  
(Reparation for Events Real and Imagined)  
<http://www.robertspahr.com/work/falsepositive/>



**False Positive Cruft**  
(Reparation for Events Real and Imagined)  
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