THE DIGITAL ARTS:
A Little History and Opinion

Christopher James, Niépce Grab Shot at Le Gras – 2007

The Loom, A Digesting Mechanical Duck & Sketchpad: A Little History

In 1984, about a year after Apple had introduced *Lisa*, its first interactive computer-operating system, I was watching a loom weaver in Benares (*Varanasi*), India, create a tapestry that he would likely make repeatedly throughout his life. A thick stack of linked and battered cards, with an abstract pattern of punched holes, provided the answer to the question… "How does the color and design of a fabric remain the same from generation to generation?"

These cards were similar to those found in the early room-sized computers, the ones with the typed warning: *Do not fold, spindle or mutilate*.

The well-worn cards were integrated into the operation of the weaver's loom and they determined which *shed* would rise in a particular pattern sequence and which wouldn't. The shed's position controlled which of the vertical warp strands of the rug in progress were back or forward in relation to the horizontal *weft* thread strands that the weaver was sliding his or her shuttle through. These rows of fibers, stacked one upon the other, produced the patterns and colors within the fabric.

The action was essentially a binary on / off system.

The evolution of the computer is as complex as the computer itself but several individuals particularly important in its development. We'll begin with Jacques de Vaucanson (1709-1782), whose creative genius was legendary in Europe in the 1700s. Vaucanson was known for his *automatons*, fiendishly complicated mechanical devices that mimicked actual life. He referred to his art form as *anatomie mouvante* or "moving anatomy" and, among his creations, besides a life-size tambourine and a flute-playing shepherd, was an extraordinary device he called the *Digesting Duck*. Vaucanson's duck consisted of over 1000 intricate parts and was able to wag its tail, eat a fish, digest it, and eventually excrete it in the same manner as a real duck. This feat was accomplished through a digestive tract made of a rubber material called *caoutchouc* that Vaucanson himself had actually discovered in South America in 1731.

Vaucanson then made a machine to manufacture the digestive tubing for his ducks. As an aside, if you're interested in how this idea might play out in a science fiction novel, pick up a copy of Phillip Dick's, *Do Androids Dream of Electric Sheep*, the inspiration for director Ridley Scott's magnificent film, *Blade Runner (1982).*

Vaucanson's genius was well regarded and Philibert Orry, the general finance comptroller, asked him if he might be able to apply his odd intellectual abilities in service of the troubled French silk industry. In response, Vaucanson revolutionized the making of all fabrics by inventing the first automated loom (1740 - 1745) and then improving on it by controlling the automation of the system (1750). This enhanced machine was, coincidentally, regulated by a system of those punch cards I mentioned earlier, making it possible to repeat designs through a form of automation rather than remembrance. As a bonus, anyone could learn to use it without a great deal of training.

Jacquard's Loom

A bit later, in 1801, Joseph-Marie Jacquard (1752-1834) enhanced the concept and created a simplified automatic loom, inspired in part by earlier inventions by the Frenchmen Basile Bouchon (1725), Jean Falcon (1728) and Jacques Vaucanson. This concept totally remodeled the weaving industry through a *linked* sequence of punch cards. In Jacquard's loom, each hole in the punch cards corresponded to a hook called a "*bolus*." This bolus hook raised or lowered a harness that directed and supported the warp thread so that the weft would lie above or below it. This alternating sequence allowed the pattern to be realized in the final fabric design.

Although Jacquard actually invented his loom in 1790, he kept it hidden due to the social turmoil of the French Revolution (1788 – 1804). When things quieted down a little, Jacquard was asked to demonstrate his machine to the French government. Seeing the value in mass standardization with the new loom, the government gave Jacquard a healthy annual stipend and declared that his invention was now public property. Unfortunately for Jacquard, his loom was so efficient and simple to use that it resulted in his looms, and his person, being beaten up by angry traditional silk weavers. The Jacquard loom was the punch-card loom design that I observed in India.

Mr. Babbage Lived On Cabbage

Jacquard's innovations led to the steam-driven punch-card systems of Charles Babbage's (1791-1871) *Difference* and *Analytical* Engine calculators. Babbage was a devilishly complicated man who immersed himself in invention, philosophy, politics, statistical analysis, and industry. In a curious merging of coincidences… he was also Sir John Herschel's roommate when they were young students at Cambridge.

His inventions, and creations, included the cowcatcher adaptation to the front of railroad steam locomotives, uniform postal rates with the British "Penny Post," occulting illumination in lighthouses, a submarine, colored lighting for the theater, the ophthalmoscope, and his never constructed, but infamous, Analytical Engine - the very first computer. The English humorist E. Clerihew Bentley (1875 – 1956), the inventor of the "clerihew," an irregular form of humorous biographical verse, composed this little piece in Babbage's honor:

Mr. Babbage
Lived entirely on cabbage
He used his head, rather than his thumbs
In inventing his machine for doing sums

Babbage would have been a strange person to have as a neighbor. He was, as Max Byrd wrote in his book, *Shooting the Sun* (2004), "*one of those irascible and colorful eccentrics that the damp, un-weeded, garden of England seems to throw up in endless profusion.*"

Babbage was enthralled by fire and once had himself baked in an oven, set at over 250°F… apparently without appreciable harm to his person. Babbage detested music as well. His public condemnation of that form of expression, coupled with his curmudgeonly and incessantly cranky behavior incited his neighbors to torment him with a full brass band outside his window, to throw dead cats at his door, and to arrange for large groups of boisterous children to

follow him through the streets, making shrieking sounds on tin whistles. Curiously, while Babbage displayed all these odd characteristics, he managed to benefit from the adoring attention of one of the allegedly most beautiful women of her time… the dazzling Ada Lovelace.

Ada Lovelace and the Analytical Engine

Augusta Ada Lovelace (1815-1852) was the ravishing daughter of the scoundrel and romantic, poet, Lord Byron, whose life featured an endless history of love affairs, debts, and living well beyond his means. He was described by one of his lovers, Lady Caroline Lamb, as, "*mad, bad, and dangerous to know*."

Ada was named after Byron's half-sister… with whom Byron had had a scandalous affair. Shortly after Ada's birth, her mother banished Lord Byron from the family home, and from that point on, refused to permit poetic influences of any kind to reach Ada, apparently in hopes of preventing Ada from being like her father. This worked for a short time, but Ada was renowned as a gifted thinker as well as an aristocrat with a volatile and seductive temperament. Her passion was mathematics, a science that she adapted to her personality by bathing all numbers in metaphorical and poetic images from her imagination. In essence, she romanticized them.

In 1833, at the age of eighteen, the comely Lovelace was introduced to Babbage. Enthralled with the poetics of his Analytical Engine and complex persona, she immersed herself in the study of advanced mathematics. In short order, Ada became so adept at the discipline that she was given the task of interpreting Babbage's overly complicated dissertations on his monstrously complicated engines. Her copious notes, adapted from both Babbage and the Italian mathematician Menabrea, tripled the content of Babbage's original thesis (1843). In her "*Notes*" Lovelace wrote, "*We may say most aptly that the Analytical Engine weaves algebraical patterns just as the Jacquard loom weaves flowers and leaves.*"

More importantly, Lovelace added her own visions of what the Babbage engines could instigate. She described a programmable engine that could compose complex music, generate and modify graphics, and calculate information of a scientific nature… far faster than the human brain. Lovelace then suggested to Babbage that his Analytical Engine could be programmed to calculate Bernoulli numbers. Her inspiration is considered (*though not universally*) evidence of the first instance of a written computerized program. It is interesting to note that, in 1979, the U.S. Department of Defense named a computer program "Ada" to honor her contributions to computer science. One last bit of interesting information before leaving Ada and Charles… Ada was addicted to gambling on horse races and managed to convince Babbage to construct an enormously complex set of tables and calculations so that she could experience some success betting on the races. I have no knowledge that this worked in their favor.

The most common attribution for the first "digital matrix" is English mathematician George Boole (1815–1864), who, in 1847, developed a concept of symbolic logic known as Boolean algebra. In 1854 Boole published the whole of his intellectual process in a book entitled *An Investigation of the Laws of Thought on Which Are Founded the Mathematical Theories of Logic and Probabilities*. Boole's thesis argued that all logic could be rendered in terms of mathematical rather than philosophical standards. He proposed that *symbols* could be substituted for principles and objects and that these objects could be divided into classes, each of which would have a specific property. These properties would then be designated as either being "on" or being "off." This is the magic behind the effectiveness of search engines. It is also representative of 1 and 0 binary logic, the same as found in the common Jacquard loom punch cards, and identical to the scheme that determines how a computer works.

In 1882 Herman Hollerith (1860-1929) became interested in the work of Jacquard, Babbage, and Lovelace; specifically he was interested in how Jacquard's punch-card automation might be adapted to a census calculating

machine that would work in much the same manner as did Babbage's Difference and Analytical Engines. Hollerith's first system utilized paper tape and pins that would penetrate the paper, thus creating an electrical contact. This was the first instance of a carded system that would activate an electrical impulse that would, in turn, activate a mechanical counter. In 1890, Hollerith engaged a fledgling company, by the name of Pratt and Whitney, to manufacture a punch-card machine that could be used like a typewriter. This machine, employed in the 1890 census, was so efficient that the projected counting time of two years took only three months. In 1896, Hollerith founded a company called the Tabulating Machine Company to market his counter. After several additional mergers he went into business with Thomas Watson, and together they created a company they named International Business Machine … IBM.

Vannevar Bush & Engelbart's Mouse

In 1945, Vannevar Bush, the vice president of M.I.T., wrote an essay in *The Atlantic* titled "As We May Think." The essay asked a logical question … *After the collective effort they had expended in developing an atomic bomb, what was the next big idea that scientists could collectively invest in with unbridled enthusiasm?* He then essentially described his answer to the question: which is basically the computer system that I am using to process these words.

That same year, a young naval radio technician named Douglas Engelbart was passing time in a Philippine library awaiting his orders to return to America. In the library, Engelbart picked up that very issue of The Atlantic and read Vannevar Bush's article. * Then he began to think of the critical importance of "*augmenting*" humankind's intellectual capacity through the creation of a technological system that would be both interactive and uncomplicated. Taking on the challenge of Bush's vision, Engelbart thereupon invented the concept of "*windows*" on a desktop. Just for good measure, he invented the mouse to move the windows around.

In 1968, Engelbart unveiled his entire system in what Steven Levy referred to in his terrific book, *Insanely Great*, as "the mother of all demos." Engelbart's breakthrough immediately caught the attention of the military that didn't quite comprehend his intentions of shared and efficient peaceful knowledge. Instead, they saw the potential for more efficient warfare. Engelbart and his team of scientists soon found themselves without space, or advocates, and closed up shop.

In 1970, a few miles away from Engelbart's laboratory, the Palo Alto Research Center (PARC) got under way courtesy of the Xerox Corporation. This was a seminal moment in what is referred to as the *Golden Age* of computer evolution. It was in this California complex, filled with beanbag chairs, hippies, and the most brilliant "geeks" in the universe, that everything changed for good. Among the scientists, was a newly anointed legend named of Ivan Sutherland, author of a 1963 M.I.T. Doctoral Thesis titled, *Sketchpad: A Man-Machine Graphical Interface Communication System*. Sutherland produced Sketchpad on a room-sized computer with a twentieth of the power of the first Macintosh II.

Using a *light pen* and his Sketchpad program, Sutherland demonstrated the first *real-time* interactive computer-aided design (CAD) drawing system, making figures and manipulating them on the screen. This was the first computer-aided image-generation system that could be changed by the user. Steven Levy wrote a great description of Sutherland's achievement, "…Sketchpad was absurdly ahead of its time. It's as if the designer of the first automobile had created a 1967 Corvette."

The digital arts may always be a weird sort of "waiting-room" where the thrills and options of the new tools are not enough, or perhaps all too much, for the work to be respected as a legitimate art. The reality of everyone needing to have the latest and greatest upgrades, every 18 months creates a difficult environment. That, plus the fact that the medium becomes more and more homogenized, is in part responsible for the current "mushy democracy" of digital

imaging. Setting that aside for the moment, I continue to see three separate and evolving digital art forms.

The Print: Graham Nash, Mac Holbert & Epson

First, much credit for the very concept that ink jet syntax could be considered as an archival and unique system of making art goes to Graham Nash and Mac Holbert of Nash Editions. In the late 1980's Nash and Holbert wrote image management software and applied it to the creation of large-scale digital images using an Iris 3074 printer and archival rag papers. This was the beginning of the mind-set that began to let photographers think about the concept of the dry darkroom.

Of all the printer manufacturers, one jumped into the concept without looking back… Epson. Epson cannot be given enough credit for their commitment to the photographic arts, and for utilizing the resource of grateful artists and photographers in the development of its product line. Epson has also shown an amazing ability to consistently improve on its printers, profiles, and pigment-based ink sets while maintaining a business model geared to professionals and students alike. Although Hewlett-Packard and Canon have joined the parade, Epson continues to lead it.

Images produced as prints are generated from original film, or digital files, and manipulated digitally to become printed, 2-D images. The latest home-based Epson 2400 (or whatever Epson version is newest by the time you read this), in concert with their Ultrachrome K3 ink sets, has set a standard for excellence that may continue to separate it from the competition. Included in this digital stew are the individual pioneers whose ways of modifying and working with digital printing technology have, in a very real way, induced such larger entities as Epson and Hewlett-Packard to put so much effort into mass-market technology. These pioneers include such landmark figures in the digital evolution revolution, as Gary Rogers, Jon Cone, John Paul Caponigro, Stephen Johnson,

Graham Nash, Mac Holbert, Pedro Meyer, George DeWolfe, Dan Burkholder, and Mark Nelson.

Photographic prints made with pigment-based, lightfast, water-resistant inks on rag papers can accurately be described as “archival”, with a life span of well beyond our own, depending upon the support and the conditions that the print exists in. This form of realized, and printed, digital artistry is most similar to photography and printmaking. As a result of the almost unbelievable improvements in the physical materials, very few practitioners, museums, critics, or collectors harbor reservations about this form of printmaking.

THE SIGNAL: INFORMATION & PERFORMANCE

The second form to be considered in the digital arts is the signal… the free transmission of electronic information and the World Wide Web itself. In this new cosmos, the artist works independently as a solo act or forms a collaborative creative relationship with others (who might not be aware of the collaboration) to express and influence thought and perception. I see this genre as being broken into two separate parts; the signal itself and the influence of the communication via that signal.

The Signal: Information

On a basic level, it is the signal that carries the information that is critical to the expression. This transmission got its start in the mid-1800’s through the inspiration of Alexander Bain’s crude facsimile machine that was improved upon in 1860 by Giovanni Casselli, an Italian priest, who invented a working machine he called the Pantelegraph.

To use a Pantelegraph, the operator would draw, or write, with fatty ink on a sheet of tin. The sheet was then placed on a plate that was charged with electric current and, in contact with a transmitter, connected to a telegraph wire.

A stylus would pass over the ink and the electric current, unable to penetrate to the charged electronic plate through the fatty ink drawing areas, would transmit what could not be transmitted (the fatty ink) to the other end of the telegraph line where the image was received on a chemically treated paper… thus making an electronic picture of the thing itself.

Perhaps the first artist to think about rendering a photographic image using electronic code was William Larson. He reasoned that the FAX machine, using the Fax machine's ability to translate images from sounds over a telephone line, produced images in values of gray. More importantly, according to William, "it transformed the image into a mediated electronic state where it was compatible with other electronically encoded information."

When Larson began this work he considered how photography might be used within an electronic system able to translate everything it was given into a FAX code… from a song to a picture in a family album… and how visually this was, in essence, a montage of signals re-constructed as a whole. By using the FAX technology of 1969, Larson may have made the first electronically montaged photographs intended to be seen, and considered, in the same way as a traditional photograph.

The Signal: Performance

The second aspect of the signal is, I believe, the most vital force of today's efforts in the digital arts. Within the last decade, digital performance has evolved into a major artistic movement, not dissimilar to the Happening movement of the late '60s and early '70s. A wonderful example would be James Downey's 2001 Internet campaign to have as many people as possible direct their personal red laser pointers at the moon at the same moment… in order to change the color of the moon. No, it didn't work, but was in the same event category as New York City radio host Jean Shepherd's 1965 box kite flying event in Central Park in conjunction with the transmission of pictures from Mars.

Another work in this genre would be Mike Parr's performance, Malevich, at Artspace (University of Western Sydney) in 2001. Regarded as one of Australia's most important artists, Parr nailed his arm to a wall, had his eyes taped over, deprived himself of food (except for water) and featured all the suffering and humiliation that one would expect from seeing a person nailed to a wall for an extended period of time. The performance was broadcast over the Internet with more than a quarter million hits in the first 24 hours. Parr performed another work the following year titled Close the Concentration Camps (Australia) where he had his lips sewn together in solidarity with the prisoners being held in Australia's detention centers. These performances bring to mind Chris Burden who, in 1971, performed the piece Shoot in F Space (Santa Ana, California) where he had himself shot in the arm by an assistant. This event became famous via word of mouth. Given the power of the Internet to create a world stage in an instant, or a theater as in the case of YouTube, it is mind boggling to consider the impact of Burden's performances had he had the web to work with. As one of my artist friends said of these examples, "Some people would chew off their leg to "make it" in the art world." In other words, don't try anything like this at home as the "buzz" is brief and the art marginal.

Digital performances require the strengths, and the limitations, of the medium's transmissions to be effective, seen, and appreciated. Sometimes it's really funny. Sometimes its sole intention is to promote social and political change and to disturb cultural lethargy. Sometimes it is just publicity. In almost every case that I am aware of, the piece is created for the art of the performance and the power of the idea that is communicated. Financial gain and reward often has nothing to do with it and that's what makes this part of the genre so alive and powerful… and democratic.

The Eye of the Monitor

The third digital art form is the advent of the unblinking monitor as the

piece itself. In this case, the monitor is both the equipment needed (the tool) and the display (the art), and the making of the image on the computer screen, or screens (as in a modular construction), requires the computer's optical and programmable nature to be used in the translation of the work of art.

This idea got its spark decades ago with the Fluxus (meaning flow) movement in the early 60's. Fluxus, an international collaborative network of important artists, including Nam June Paik, John Cage, Alan Kaprow, Charlotte Moorman, and George Maciunas, was highly regarded for its dedication to the integration and blending of all disciplines. One of the principles of Fluxus was that a performance required an audience to complete the piece and the late Nam June Paik may be considered the "godfather" of what is presently active in this room of the digital arts mansion. Some examples …

In one of my favorite Nam June Paik works, TV Buddha, a statue of Buddha contemplates a TV with an image of Buddha contemplating the TV… permitting the audience to make the connection of this perfect "oneness." In another piece, Paik incorporated the projection of a clear film leader with the 10-9-8-7, etc. sequence of numbers that you used to see just prior to the beginning of a film. When the film leader got to # 1… it simply began again, forcing the audience to re-new their anticipation for the film that would never begin.

In 1969, Paik collaborated with classical cellist, Charlotte Moorman, in a work titled V Bra for Living Sculpture, 1969, that featured miniature TV monitors in Moorman's bra, broadcasting the sights and sounds of Moorman playing her cello. Earlier, in 1967, they had collaborated on a piece called Opera Sextronique in which Moorman had played her cello topless… which resulted in her arrest for indecent exposure. In these pieces, and in Paik's other major works, the monitor functions as the visual source, the narrator, one of the actors, and the director of the event.

Today, the monitor plays the role similar to the one that flew over the

nighttime city in Ridley Scott's Blade Runner. The monitor is a force field of digital information, designed to direct, influence, coerce and seduce. Consider JumboTrons in football stadiums, Times Square in Manhattan, and the Ginza shopping district in Tokyo. In recent years, these large digital screens have been used to bring digital art to the public and galleries in Cambridge, Massachusetts (Lumen Eclipse) and Toronto, Canada are leading this movement. Then there is the concept of what the "screen" is and what it suggests about the image, or artist, or mass that is projected upon it. An example would be Doug Aitken's 8-channel video piece projected onto the side of the new Museum of Modern Art in February 2007. Did projecting it on MOMA instantly make it art rather than information? All of these are simple references to the power of the screen and what will eventually, in my mind, replace static public advertising, propaganda, and public art display.

DIGITAL CRITICISM

The Art

As has been the case for a while now, the primary dilemma for critics (and presumably a huge relief to the rest of the art world) is that there is no great mass of formal academic and critical evaluation for determining the merits of any of this new digital work … or, more importantly, of the process or actual systems that render it. There is a growing tendency to apply post-modernistic theory and dialogue to digitally generated, expression but I've yet to hear anyone do it successfully in public without eyes rolling up to the heavens. In the genre of the digital arts, it should be difficult to fully comprehend, appreciate, and evaluate the art without a discussion of that art's syntax… the technological components and processes that facilitate the delivery of that art. Think of it as the critique of a jockey absent discussion of the merits of the horse. Digital syntax clearly exceeds the issue of what type of brush a painter uses to render a stroke of paint, as the technology is a true collaborator in the art making.

Clearly, it is not polite to digital artists to apply traditional, critical, and conceptual theory to the various forms of digital expression. What is, after all, the criterion? Where is the traditional atelier, as in painting, that the confused digital artist can return to for re-evaluation, guidance, and mentoring, in order to return to the roots of the process? Where will this work fit in the history of human expression and when will the machine be as relevant as the artist using it is… as, say, in horse or stock car racing? These are a few of the questions now evolving from the marriage of digital imaging and artistic expression and ones which will find, trust me, their own perfect and unique answers as time passes. One thing is certain… as in every new form of creative expression, there are people who will determine the marketplace and there will be people who find they can make a living by becoming an arbiter of what is, and is not, art in that genre.

The primary hurdle to forming a legitimate critical base is more obvious now than it was five years ago. The sheer speed of the changes in the digital arts makes the formation of a "new" theoretical or critical structure very difficult. As the technology surges ahead, the speed of the processor jousts with the possible speed of the human mind. It will be interesting to see how to place the old square pegs of classical art criticism into the round holes that are being rapidly drilled by the digital arts.

Here's a decent example. In April 2002, Matthew Mirapaul wrote a piece for the New York Times about New York Artist, Mark Napier, who was attempting to carve out new territory for himself and his art. Mr. Napier, an accomplished digital artist whose work had been shown in both the Whitney and Guggenheim Museums, decided that the Internet was not a gallery and that he still had to make a living. The article went on to describe Mr. Napier's solution to the problem, and the fact that he had succeeded in selling three, $1,000 "shares" in his new work, called The Waiting Room. It turned out that The Waiting Room was an interactive, animated, painting installed in a private chat-room gallery in a secret place on the Internet. If you wanted to play with or look at, the work…

you had to invest and sure enough… as in the fable of the “emperor’s new clothes,” and the zeitgeist-shaping, performance work of the 70’s, some people actually did.

For their money, “the investors” received the chance to play with Mr. Napier’s software that generated swirling sights and sounds against a very arty black background… with each shape and form linked to a specific hum, beep, or chirp.

Mathew Mirapaul wrote, “Mr. Napier hopes to sell as many as 50 shares in The Waiting Room, an approach that emphasizes the work’s participatory nature. When multiple owners (investors) view it online at the same time, they can produce shapes that complement – or obliterate – those made by others (apparently the other two investors). The work is the visual equivalent of an Internet chat room with “conversations” occurring in geometric shapes instead of words.”

The article continued by stating that the key investment points were that the shareholders could visit “their” art anytime they were on line, that they would be receiving a real Certificate of Authenticity and a CD-ROM that contained the software… sort of like going to the theater and getting a T-Shirt for “Cats.” The work’s value, says the author, “resides not in its keepsakes but in the experience it provides for the viewer.”

Says Mr. Napier, "Once you forget that there's a computer mediating this, it is just as physically there in the space as a canvas. It's just a question of shifting an art culture that for centuries has been immersed in the collectible object."

This reminds me of another good anecdote from the Manhattan art scene. There was this artist (who shall go unnamed) in New York who announced to a number of important collectors that he was going to be producing a very

important work and that all they had to do to own and collect this important work was to write him a large check. Of course they did, whereupon the artist endorsed the checks and cashed them. Later, when one of the collectors inquired as to when he might be receiving his important work of art the artist asked if the bank had returned to the collector the signed, and cancelled, check… which was, of course, the work of art.

Another good example might be the ability of the computer to challenge a sacrosanct discipline… such as sculpture. A few years ago, I saw an example of an artist who had her body scanned by an extraordinary laser device that was able to record every nuance, tiny hair, and goose bump of her physical self. The scanner then relayed this information to a computer-controlled casting machine that proceeded to scale, proportion, carve, and duplicate her body in Lucite. Most would agree that evaluating her sculpture from a traditional perspective would be impossible without recognizing the role of the machine in its creation. In truth, the present forms of digitally based aesthetic are experiencing philosophical growing pains not very different from those that photography suffered at its inception.

An illustration of this parallel might be made still more apparent if we consider a few sentiments from the perpetually cranky 19th-century poet and critic, Charles Baudelaire. In fairness to the argument, I'll point out that Baudelaire was a man of deep moods and unrelenting despair, whose poetry centered on the inseparable connection between beauty and the inevitable corruption of that beauty.

In any event, when Baudelaire described his first impressions of photography, he wrote about it in less than glowing terms, implying that society was squalid and narcissistic in its rush to gaze on trivial images of itself rendered on scraps of metal. He also wrote, in a critique of an exhibition in 1859, "If photography is allowed to supplement art in some of its functions, it will soon

have supplanted or corrupted it altogether….” This is a disposition that has its twin in statements now uttered by many traditional artists and critics speaking about the brave new world of the digital arts. However, unlike a few years ago, these voices become fainter with each passing year. As the beauty of the “science” becomes obvious, and as the digital foundation becomes more a part of our everyday lives, the skeptics are finding it easier to become converts.