The Evolution of Style and Gigantism in New Media Art

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Premise

In the competition for attention new media artists have increasingly entered the realm of spectacle. If a wall sized projection is good, then a projection on the side of a building is even better. If interactive music using two cell phones is good, using one thousand cell phones is even better. If a small cube made with 27 RGB LED's is good, a garage-sized cube with thousands of LED's is even better.

Is this trend towards gigantism a legitimate strategy for the development of style in new media? This question is explored from the art historical point of view of Heinrich Wölfflin, and the psychological and neuroaesthetic view of Colin Martindale.

1. Scale, Style, and New Media Art

Chris Burden is a performance artist perhaps best known for his early 1972 performance peace called *Shoot*. The video and photographic documentation show Burden being shot through the arm by a friend using a rifle from 18 feet away. In his piece *Trans-Fixed* Burden's hands are nailed to the roof of a Volkswagen. With his body stretching across the trunk with his feet on the bumper, he appears to be crucified on the car. Photography documents the stigmata. The performances are conceptual and minimal in form, and yet create a spectacle that is hard to ignore. But where can one go from there?

Burden's solution was to continue making spectacular work, but through the exploration of scale rather than human pain. *What My Dad Gave Me* is a 65-foot, 16,000-pound model skyscraper using approximately 1,000,000 toy Erector Set parts. For *Urban Light* Burden arranged some 200 lampposts creating a forest of lights on the Los Angeles County Museum of Art (LACMA).

Burden's recent piece for LACMA is *Metropolis II.* It is described as follows:

> "Metropolis II is an intense and a complex kinetic sculpture, modelled after a fast paced, frenetic modern city. Steel beams form an eclectic grid interwoven with an elaborate system of 18 roadways, including one 6-lane freeway, and HO scale train tracks. Miniature cars speed through the city at 240 scale miles per hour; every hour, approximately 100,000 cars circulate through the dense network of buildings. According to Burden, 'The noise, the continuous flow of

the trains, and the speeding toy cars, produces in the viewer the stress of living in a dynamic, active and bustling 21st Century city.' " [1]

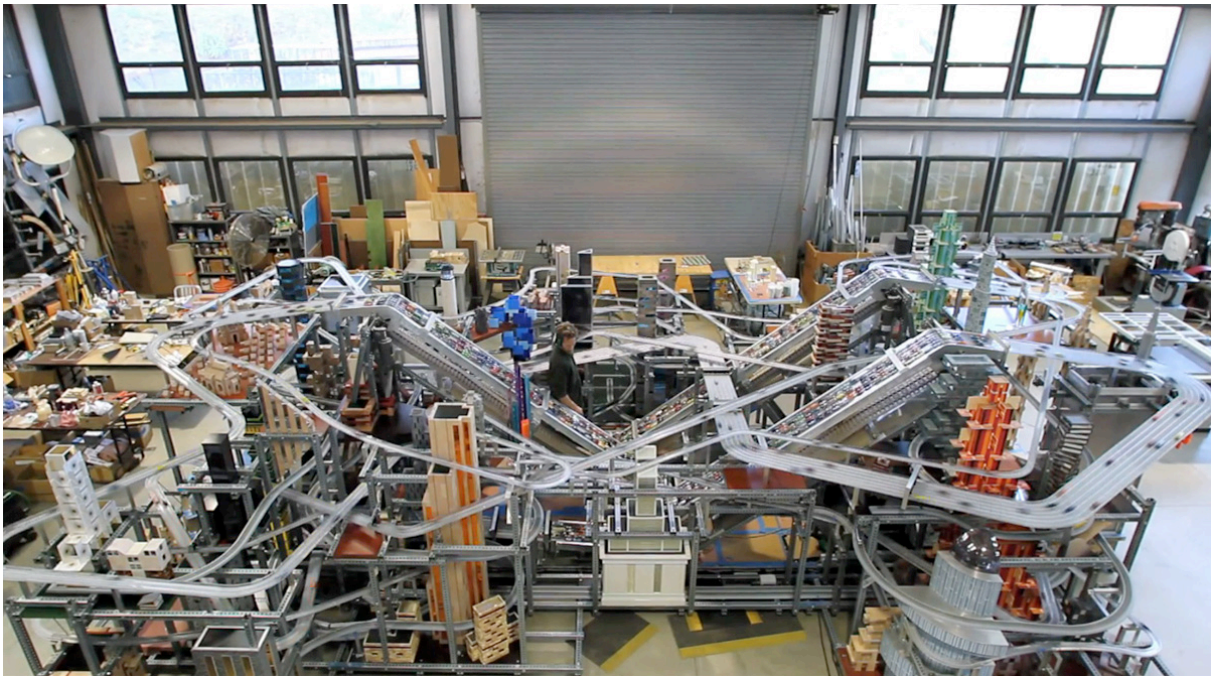

Figure 1 - Chris Burden's "Metropolis II" in his studio

The 100,000 car count is a bit misleading. There are actually 1200 custom made cars that make about 80 laps per hour. Nevertheless the sheer size and sound makes for an impressive experience. But is it art?

Consider the model train systems exhibited at the Museum of Science and Industry in Chicago. The first system opened in 1941 and covered 2340 square feet using 1/48 scale trains and scenery. It included 1000 feet of track and 40 switches running 10 trains. It closed after running 60 years in 2002.

Figure 2 - An early model train installation at Chicago's Museum of Science and Industry

The new exhibit titled "The Great Train Story" took 40 people over 12 months to create. It documents the journey from Seattle to Chicago using 50% more floor space to run 30 trains over 1400 feet of track. The track shape itself took 25 iterations to design. It includes 192 buildings that are exact scale replicas of actual buildings including Chicago's Sears Tower. The Red Line subway station at Chicago and State is recreated brick for brick, and is populated to reflect the individuals who were waiting for the train at 1:56 pm on April 3, 2002. Rather than using a contemporary electronic computer, the control system uses a complex system of relays. This allows the system to be restarted instantly without the need to reboot a computer. [2]

Figure 3 - "The Great Train Story" at Chicago's Museum of Science and Industry

So why is *Metropolis II* considered to be art while *The Great Train Story* is presumably considered to be high craft? If innovation is the key the Museum has Burden beat by several decades. Burden's work is a bit more abstract while *The Great Train Story* strives for mimesis, but both representation and abstraction are found in art. There are many theories of art, but a key notion in contemporary theory is that an object is art when it is presented in an art context. Burden thinks there is a bit more to it than that, but it strikes me as a marginal claim.

> "It's not like a model train set," Burden says as he guides me around the structure—an 18-laned tangle of hills, bridges, tunnels, ramps, overpasses, skyscrapers, spillways, and chutes. "We have suggestions of types of buildings you find in L.A. But they're not models. And we kept the scale vague, making the cars the dominant element." [3]

Ultimately what makes both Metropolis II and The Great Train Story work is the sheer size of the work and the apparent complexity of the multiplicity of moving parts. Like the best contemporary art they challenge the senses without overwhelming them. There's no doubt that *Metropolis II* is art. If *The Great Train Story* was moved to Chicago's Museum of Contemporary Art it would be too.

In the realm of new media art a sort of gigantism has set in. Somehow artistic uses of technology that might seem trivial on a small scale garner headline-like attention when they are simply applied on a large scale. There are many examples; here are but a few:

Chris O'Shea - His installation Audience uses actuator-fitted mirrors and sensors such that as people pass by the mirror tracks their motion and always faces them. A single mirror would be an amusing piece. By installing dozens of mirrors it becomes notable art. [4]

Mark Lottor / 3waylabs - The RGB physical pixel, sometimes in the form of a single LED, has become a staple of physical computing. Relatively simple to control, countless hobbyists have created RGB pixel cubes with LEDs in a matrix configuration. What Lottor has done is build large versions with thousands of lights measured in yards rather than inches. His work is popular at Burning Man and similar festivals. [5]

Philip Beesley - His Hylozoic Ground series of installations presents dense arrangements of biomorphic plastic constructions that integrate sensors and actuators to slowly respond to visitors. The behavior and supporting technology of a given segment is within reach of most advanced physical computing students. His taste and style is finely tuned. Again what makes the work so compelling is its sheer mass. [6]

Leo Villareal - Working with light sources of various kinds Villareal's work has grown over time to works of architectural proportion. Unlike the other artists noted here Villareal's pieces exhibit complex behaviors based on simple rules and emergence. Before he became an international figure I was pleased to include his first light piece

Red Life in the exhibit COMPLEXITY. (I curated this travelling show with Ellen Levy in 2002.) *Red Life* is only 30 by 36 inches in size. [7]

These few pieces are not enough to make the global case. Nevertheless, if the reader will allow that the trend towards gigantism is present in at least some new media, then we can explore whether some broader principle of stylistic evolution is at play.

2. Heinrich Wölfflin and the Development of Style

Heinrich Wölfflin is a foundational art historian and theorist on the development of style. In Principles of Art History he presents a framework for the analysis of art in the 15th and 16th century *classic* style as compared to the 17th century *baroque* style. He breaks down the transition using five pairs of polar concepts.[8] These are:

Linear versus *Painterly* - The classic style emphasizes the edges of objects where the baroque emphasizes areas in terms of shade and texture without hard edges.

Plane versus *Recession* - Depth in the classic style is established by assigning objects to planes parallel to the picture plane. In the baroque objects can continuously recede into the picture without a sense of layered planes.

Closed Form versus *Open Form* - Also called tectonic form, classic works tend to be self-contained with predominately horizontal and vertical relationships. In a-tectonic baroque works lines of action can point beyond the image fully exploiting diagonal relationships.

Multiplicity versus *Unity* - Both the classic and baroque styles achieve unified compositions, but they do so by treating collections of parts differently. In the classic style parts are detailed coordinated accents. In baroque work parts are subordinated to the whole and lose their sharp individuality.

Absolute Clarity versus *Relative Clarity* - Classic art strives to present a view that is complete and lends itself to analytical viewing. In the baroque the view is not as obvious in service to a painterly presentation that invites contemplation without exhaustion.

While Wölfflin addresses a specific period in art history he implies that this framework can be applied to other times. More generally his use of dualities in stylistic analysis has been quite influential. However, the issue of what happens after the baroque has been maximized is not adequately addressed. With regard to the concerns here, he doesn't address the issue of scale as an aspect of style. And most importantly Wölfflin describes the development of style but he doesn't explain the underlying reasons *why* it happens as described.

3. Colin Martindale's Clockwork Muse

Psychologist Colin Martindale spent a lifetime applying the empirical methods of experimental psychology to the arts. Building upon and correcting previous art related psychological work, particularly that of Daniel Berlyne, Martindale has attempted to give a scientific account of the evolution of style in the arts. [9] The first principle he builds upon is the *peak shift phenomenon*.

3.1 Peak Shift

Hanson first documented peak shift response in an experiment with pigeons trained using operant conditioning. The pigeons were taught to discriminate between color stimuli, learning to peck on a key when shown one color and to ignore a second color. The pigeons were then shown color-shifted variations of the positive stimulus. One might expect the pigeon's response to fall off symmetrically with greater color-shifts in either direction. Surprisingly the pigeons showed an exaggerated response to color-shifts away from the original negative response. [10]

It is hypothesized, for example, that the evolution of the peacock's display began with a mutation that created a crude eye-like mark here or there on the male's plumage. The stimulus elicited a response from females resulting in a higher probability of mating. Given the peak shift phenomenon males with more numerous and distinct markings would fare even better in the mating game. Over a number of generations this resulted in the elaborate markings we see today.

It's possible that the gigantism we see today in new media is simply the result of the peak shift phenomenon. If a small cube made of RGB LED's is stimulating, perhaps doubling the size and number of light sources is more stimulating yet. And so we see light cubes growing from palm sized, to tabletops, to free standing sculptures, to assemblages of nearly architectural size.

3.2 Arousal Potential and Habituation

Daniel Berlyne defined *arousal potential* as a property of stimulus patterns and a measure of the capability of that stimulus to arouse the nervous system. Arousal potential has three sources; psychophysical properties such as very bright light; ecological stimuli such as survival threats like pain; and especially what Berlyne called collative effects. Collative effects are combined, comparative, context sensitive experiences such as "novelty, surprisingness, complexity, ambiguity, and puzzlingness." Numerous studies have established that observers prefer a medium degree of arousal potential avoiding over- or under-stimulation. [11, 12]

In dynamic tension with arousal potential is the phenomenon of *habituation*. Whether considered at the low level or neurology or the high level of audience response, the repetition of a stimulus results in decreasing psychological reactivity to it.

The combination of peak shift and habituation creates a dynamic such that artists will seek novelty, and over a period of years the arousal potential of works within a given style will increase monotonically. According to Martindale this is the engine that drives the evolution of style.

3.3 Martindale's Model of Stylistic Evolution

Martindale's model for the evolution of style turns on the interaction of two cognitive modes.

Secondary-process cognition is the mode of everyday waking reality. It is used for problem solving, logical deduction and induction, and deals with abstractions and analysis. Martindale calls this the *conceptual*.

Primary-process cognition is the mode of fantasy, dreams, and reverie. It is irrational, free-associative, and concrete as opposed to abstract. In its extreme forms it becomes psychosis and delirium. Martindale calls this the *primordial*.

The conceptual and primordial, however, exist on a continuum, and our moment-by-moment thoughts can modulate on this axis. For example, making mental distinctions is more conceptual, and finding similarities is more primordial.

When a new style is invented, that alone is a source of novelty. Conceptual content can be used to populate analytical elaborations of the initial style. Over time, however, the search for novelty requires what Martindale calls *regression into the primordial*. The primordial is the source of truly novel ideas and unexpected associations. As obvious associations are "used up" the primordial must be mined to new depths in the search for novelty. Once the primordial content is maximized only the invention of a new style can introduce novelty and further increases in arousal potential.

It is beyond the scope of this article to describe them in any detail, but Martindale has conducted a wide range of experiments that analyze style in the arts. Typically these studies use large bodies of historical art over long periods of time. Functional definitions of primordial and conceptual content are used to create quantitative measures of both. In addition measures for arousal potential are made. In a broad range of art forms from across the centuries these studies confirm Martindale's model.

For example, Martindale studied British poetry from 1550 to 1949. By applying textual analysis software he was able to extract time-series data as to mean word length, word frequency variation, semantic intensity, and so on. From there he was able to create a composite index that more or less reflected unpredictability or entropy. He was able to show that 71% of the variance from one 20 year period to the next was due to increasing arousal potential.

Primordial content was also found to rise over time, but the data also contained a cyclical or oscillatory signal.

> "70% of the variation is due to a monotonic uptrend. This trend is purely linear: it does not accelerate or decelerate across time. However…the means do not all fall on a straight line; the other 30% of variation is due to the quasiperiodic oscillations around the trend line. Presumably, the linear uptrend has occurred because poets needed more and more primordial cognition to think of useful word combinations. Theoretically, the oscillations indicate stylistic changes. Thus, in British poetry, primordial content does tend to decline during periods commonly seen as involving initiation of new styles - Chaucerian, Skeltonic, Tudor, Jacobean, neoclassic, preromantic, romantic, postromantic, and modern - and to rise once a new style is established." [9]

Martindale confirmed this pattern of rising arousal potential and rising yet oscillating primordial content across a number of art forms and periods including French, British, and American poetry; European and American painting; Gothic architecture; ancient art; Japanese prints; and music.

There are understandable criticisms of Martindale's approach to evolution in art style. Some complain that the theory says nothing about individual artists or works of art. Others argue that while retrospective studies can show a pattern of increasing arousal potential and increasing while oscillating primordial content, Martindale's model has no real predictive power as to where style will go in the future.

Martindale points out that just because the law of gravity says nothing about whether a falling apple is sweet or sour, that doesn't mean it's a useless law. Whatever one thinks of Martindale's model his broad range of empirical evidence cannot be ignored or easily explained away.

4. Conclusions

In Wölfflin we see what may be a single cycle contained in Martindale's model. Wölfflin begins with the classic style as a fresh presentation that can be exercised based on abstract rational principles such as linearity, stacked planes, and closed forms. Over time the style regresses into the irrational primordial baroque of painterly areas, continuous recession in depth, and open forms.

As for the gigantism now exhibited in new media, it is hard to justify as an evolution of style within Martindale's model. His evolution of style involves regression deeper and deeper into the primordial. The scaling up of new media is merely a brute-force method of increasing arousal potential. It ignores the deeper exploration of primordial content required to further develop a style and set the stage for the invention of new styles in the future.

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