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**Multiple Screens, Spectatorial Freedom and the Conception of Perception of Production:
Or, Why 'New Media' forms are rarely novel.
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Introduction:

How closely tied are the current interest in multi-image works and the breath-taking evolution in new media technology we have recently witnessed? To answer this question, we must think back a bit, to 1927, when Abel Gance coined the term "Polyvision" to refer to the use of multiple images presented simultaneously. Gance's three-screen silent classic, *Napoleon*, generated befuddlement: Bruce Kawin tells us that Gance responded to his critics by saying, "Do me the favor of believing that maybe your eyes do not yet have the visual education necessary for the reception of the first form of the music of light" (Kawin 101).

Gance wasn't the first filmmaker to use multiple images. Like much "innovative" work of feature movie-makers before and after him, he borrowed from the so-called "avant-garde" film. In 1924, a French painter made *Ballet Mécanique*, working with Dudley Murphy, an American cinematographer whose scientific investigations into optics led him to develop a lens with a faceted surface. Léger used that lens (and other devices) to create a quasi-Cubist, multi-image effects in that film. In 1926 the Brazilian-born, Swiss-trained member of a group of avant-garde artists around Marcel l'Herbier and Louis Delluc used multiple images at the end of his pioneering city symphony, *Rien que les heures* (1926). Hans Richter's *Filmstudie* (1926) also used multiple images, as did his *Rennsymphonie* of 1929.

Populist works have often drawn upon vanguard works for ideas and, at various times, people working in popular film and television drew from the avant-garde the idea of using several co-ordinated images simultaneously. The multi-screen works exhibited in Montreal on the occasion of Expo '67 are now legendary. Multiple screen works were shown at the NFB pavilion (*Labyrinth*) and Ontario Pavilion (*A Place to Stand*); *Diapolyecran*, in the Czech pavilion, was an especially complex work presented at that same exhibition. It was produced by the brothers Alfred and Emil Radok, who earlier had presented their "*Polyekran*" as the Czech entry at the Brussels World Fair of 1958. Expo's *Diapolyecran* was an extension of the *Polyekran*. Spectators sat on a carpeted floor of a small auditorium before a wall 32 feet wide by 20 feet high, made up of 112 cubes, with each side two feet square. The cubes, each fitted with two slide projectors, glided backwards and forwards and changed pictures with split-second accuracy. *Diapolyecran*'s subject was the parallel between cosmic evolution and industrial progress. The pictures were ever changing: multiple facets ("windows") that collectively formed a single large image would split apart and then reassemble. Images flowed from volcanic chaos to green landscapes, from amoebae to insects to animals, from raw materials to gleaming machinery, from primate to Adam and Eve, and finally, to modern man in his contemporary world.

More derivative still were some multiple-image works of the 1970s. There was a brief, astonishing moment in the late sixties when multiple screen cinema experienced fleeting popularity, with movies like Richard Fleischer's *The Boston Strangler*, Norman Jewison's *The Thomas Crown Affair* and, best known, *Woodstock*, edited by the brilliant Thelma Schoonmaker (among others, including a then-unknown Martin Scorsese).

When thinking of multi-image works preceding the advent of the 'new media' one should not overlook the much earlier (and much more splendid) multi-image constructions created by

the makers of retable and stained-glass windows and the constructions created by vanguard artists. However, these works belong to a different aesthetic context than the productions later vanguard artists offered in such great numbers (not least because of their narrative investments). A sober estimation of the more recent interest in multiple images and multiple viewpoints is that use of these form has hardly been uncommon amongst vanguard arts of the twentieth-century. Painters were first among twentieth-century vanguard artists to develop visual forms that incorporated multiple images and filmmakers followed soon after; so new media artists are truly Johnny-Come-Latelys to this enterprise.

We should be more precise about the differences in contexts and goals that separate the makers of retable and stained-glass windows from the vanguard artists making multi-image works in the twentieth century: one feature that distinguishes the later work from the earlier, I shall contend, is that, for the later artists, the use of multiple images is only one dimension of a larger issue that we might characterise as the effort to contrive forms of construction that accord viewers the freedom to create aesthetically-relevant relations on their own, uncoerced by devices the artist has formulated. By the early 1950s, spectatorial freedom was a theme whose time had come. The insistence with which aestheticians and film theorists dealt with this issue was partly the result of the philosophies of freedom that developed in France at the end of the Second War. Spectatorial freedom was the central problematic of a film theorist who flourished in the 1940s and 1950s, Andre Bazin. The central opposition of Bazin's theory was between filmmakers who relied on montage and those who used long takes and composition in depth. The filmmakers who relied on montage contrived more dictatorial sorts of forms – forms that, with every cut, tell the viewer: "Now look at this" and "Now look at this." Deep focus is a form of composition in which foreground, mid-ground and background are uniformly sharp. Briefly, Bazin's argument is that, unlike selective focus and classical cutting (or, more exactly, what David Bordwell refers to by "piecemeal decoupage"), which conspire to direct the spectator's attention to a screen object that is in sharp focus, while defusing the remainder of the field to varying degrees, deep focus allows the spectator's attention to wander the screen, perhaps selecting the objects it rests on. This effect is enhanced when the shot remains on screen for some time. *Citizen Kane*, for example, combines its overall effect of deep focus with many unusually long takes, giving the spectator the time to explore the frame, as well as the material and formal means. Thus, for Bazin, *Citizen Kane* is the primary example of liberated viewing.

This liberation of the viewer has long been a theme of those who have advocated multi-screen works: the Laterna Magika show, exhibited in the Czech pavilion at Expo '67 allowed viewers to select, from amongst thirty-two possible pathways through the film, the route they would travel. This "Kino-automat," as it was called, was an experimental theater where six times a day, groups of 127 spectators watched a 45 minute movie. As the cinematic tale unfolded, it posed a quandary: Should Character X do A, B, C. or D? The film would stop – this happened five times during the show – the lights went up, and an actor would appear. The audience voted for the choice from buttons beside their seats and a computer tallied the scores and posted them on boards on the sides of the screen. The film proceeded according to the choice made by the collective audience.

The New Vision

Post-WWII philosophies of freedom (philosophies whose themes are still evoked in writings on new media) reflect some of the reasons that led artists to explore multi-image works. But we can trace the issues that led to these concerns back considerably farther – in fact, over a century further back. The grander theme, the theme into which this issue of spectatorial freedom should be folded, I suggest, is the conception of perception as production. Perhaps not surprisingly, this conception arose just as major changes were overtaking the economic and

social spheres.

At the beginning of the twentieth century artists who attached themselves to various artistic movements, who espoused different aesthetic values and painted in different styles, made common cause in celebrating the new technology. Modern technology, by furnishing the means to produce goods in abundance, promised to end scarcity. Furthermore, technology seemed to promise a future of streamlined, accelerated forms. Industrial technology meant speed, plenty, and a hardness that many find appealing – especially so by way of comparison with the florid sentimentality that was so common in popular culture (epitomized, perhaps in D.W. Griffith's films). What is more, the most advanced industrial technology has always been concentrated in the city, and at the beginning of the twentieth century the city still seemed to many to be an exciting place to live; the existence of films such as Alberto Calvacanti's *Rien que les heures* Walther Ruttmann's *Berlin, die Symphonie der Grossstadt* and Dziga Vertov's *Chevolek s kinoapparatom* as well as proclamations of Futurist painters, make that obvious. This association made technology seem all the more exciting.

A sensibility stimulated by the technologies of movement and speed is a distinctively urban phenomenon. This sensibility, which displayed a need for physical mobility and an enthusiasm about being transported through space, which craved unusual vantage points and, especially, bird's-eye views, was a sensibility prepared to respond to the cinema. It was an optimistic sensibility that responded to the city as to a site where stimulations proliferated, where abundance eliminated want, where every conceivable desire found its match in reality (as the Surrealists so enthusiastically affirmed).

The interest that late nineteenth and early twentieth century artists took in urban reality was a consequence of changed conditions of living. In 1850, Europe had still been overwhelmingly rural. Most English, French, and Germans, and an even higher portion of Italians, Poles, and Spaniards, lived in the countryside or in small, essentially rural, hamlets. Forty years later the machine, and the centralizing force of the industrial revolution, had resulted in mass migration to the city. Of course, artists had divided feelings about these developments – but what is unchallengeable is that Baudelaire's *fourmillante cité*, a city of people milling about, as though caught up in much larger dynamism they do not grasp, was displacing pastoral existence. Thus, the Impressionist paintings of Monet and Renoir are the last great celebration of nature in European painting (and even they are largely a response to urbanization). Not the landscape but the metropolis came increasingly to command artists' attention. Not the slow growth and sudden decay so typical of natural processes, but synthesis, transformation and change characterize the subjects in which late nineteenth and early twentieth century artists took an interest. Fast travel, made possible in the steam locomotive, changed people's sense of space: seeing the world from a speeding train (or, later, a speeding automobile) was different from seeing it on foot or from a horse-drawn carriage. Mechanical transportation technologies compressed more views into a short period, and the observer had less time to contemplate each – views became merely transitional phenomena, each leading to the next. Succession and superimposition of views, the unfolding of landscape in flickering views as one traversed it, and the heightened perspectival effects motion produced (for example, the immediate, perceptual evidence that the trees lining the track move across the visual field more quickly than the village way off in the distance) became the subject of quotidian perceptual reports.

The reality of change began to outstrip artists' ability to render it; even the glorious monuments of the era, edifices such as the skyscraper and Eiffel Tower (which also endowed people's imagination with the aerial view – and the aerial view, as it reached sufficient elevation, presented the world as most modernist paintings and photographs soon would, as a flat, patterned surface), St. Pancras Station and the Brooklyn Bridge surpassed what artists created in their wildest imagination – and poets such as Hart Crane, and painters such as Fernand Léger, began to explore forms that would be adequate to this new reality. The same social

changes that called the cinema into existence also produced the dynamism of Cubist painting.

The avant-garde especially was excited by the speed and energy that propelled the modern world into the future. Apollinaire began *Zone* (in the *Alcools* series) with an invocation of modernity:

A la fin tu es las de ce monde ancien
Bergère ô tour Eiffel le troupeau des ponts bêle ce matin

Tu en as assez de vivre dans l'antiquité grecque et romaine

Ici même les automobiles ont l'air d'être anciennes
La religion seule est restée toute neuve la religion
Est restée simple comme des hangar de Port-Aviation.

Apollinaire connected this urbanity with the cinema. In 1916, a journal, *SIC*, asked him what he thought about the future of the theatre – Apollinaire replied that the theatre of the future, which would subsume reality in its folds, was the cinema: “The question is too complicated, perhaps,” Apollinaire allowed. Nonetheless:

Plays which take place in one room will become less important than before.
Perhaps a more violent or more burlesque circus theatre will be born, also
simpler in form. However, the great theatre which can produce a total dramaturgy
is the cinema. (Lawder 73)

Cubists shared the enthusiasm for the modern: a painting from 1912, by no less than Pablo Picasso, included the slogan, “*Notre avenir est dans l'air*” (“Our future is in the air”), referring to the development of aircraft that allows humans to take wing.

The cinema plays an important role in this interest in the new consciousness and the new way of seeing. The cinema's use of multiple viewpoints (reflected in the changing vantage points of individual shots), its incorporation of relentless movement, its constitution as a pattern of light – all these features of the cinema reflect the modern dynamics of vision. These features of the cinema are also features of Cubist art (as they are of Futurist art). Furthermore, like Cubist painting, the cinema reflects the dynamisation of consciousness. The idea that consciousness is dynamic was itself “in the air” at the time when Cubist art and the cinema were in their formative stages: Bergson made dynamism a central topic of his philosophy: “What is real is the continual *change of form: form is only a snapshot view of a transition,*” he asserted (328). Bergson understood real time in a fashion similar to that in which the Cubists understood it. For him, time is not punctal: our understanding of each instant comprises an awareness of what immediately preceded it and what follows it – recollection of the immediate past and anticipation of the immediate future are incorporated in our understanding of the present. Indeed, this understanding of time as a flow, and not a series of discrete instants, made Bergson critical of the cinematic representation of time and perception, noting that it embodies a conventional, but incorrect, understanding. “We may therefore sum up what we have been saying in the conclusion that the *mechanism of our ordinary knowledge is of a cinematographical kind,*” Bergson remarked (332), by way of characterizing the limitations of our common way of understanding. But often criticism, the marking out of differences, betrays a deeper affinity – and what we can discern in both the cinematographical understanding and that form of understanding which Bergson held most valuable is that they are both synthetic forms that draw relata into a unity.

The early advocates of Cubism often defended their positions by offering Bergsonian

assertions: for example Jacques Rivière explained why lighting must be eliminated.

[...] It is the sign of a particular instant [...] If, therefore, the plastic image is to reveal the essence and permanence of beings, it must be free of lighting effects [...]

Lighting is not only a superficial mark; it has the effect of profoundly altering the forms themselves [...] It can therefore be said that lighting prevents things from appearing as they are [...] Contrary to what is usually thought, sight is a successive sense; we have to combine many of its perceptions before we can know a single object well. But the painted image is fixed. (Harrison 184)

The conception of perception as production constituted a basis for attacking Optical Realism. Gleizes and Metzinger used the conception exactly to that end in their pioneering work, *Cubism*.

[Courbet] remained the slave to the worst visual conventions. Unaware of the fact that in order to display a true relation we must be ready to sacrifice a thousand apparent truths, he accepted, without the slightest intellectual control, all that his retina presented to him. He did not suspect that the visible world can become the real world only by the operation of the intellect [...]

The art of the Impressionists involves an absurdity: by diversity of color it seeks to create life, and it promotes a feeble and ineffectual quality of drawing [...]. Here, even more than in Courbet, the retina predominates over the brain . . .

[...] The only possible error in art is imitation; it infringes the law of time, which is the Law. (From Gleizes and Metzinger, *Cubisme*, in Chipp 207-209)

Or, making the connection between multiple viewpoints and the conception of perception as production even more explicit:

We are certain that the least intelligent will quickly recognize that the pretense of representing the weight of bodies and the time spent in enumerating their various aspects is as legitimate as that of imitating daylight by the collision of an orange and a blue. Then the fact of moving around an object to seize several successive appearances, which, fused in a single image, reconstitute it in time, will no longer make thoughtful people indignant. (Chipp 216)

This is a very cinematic manner of understanding experience – for film, it is clear, had quickly become central to the way that people understand reality. Of France a few years after the beginning of the Cubist movement – of France during the Great War – an English journalist wrote:

French intellectuals and aesthetes were very eager to evolve an aesthetic of the Cinema in spirit of the obvious fact that the Cinema was, at bottom, a mechanical toy which could never be dissociated from mechanics. It did not matter to them what the war conditions were, that for instance the Germans were but fifty miles off doing their best to persuade Big Bertha to reduce Paris to dust, the advance-guard were up and doing with their constant cry, "Now for the Cinema." Often I sat on one or other of the well-known café terraces, the Café Floré on the Boulevard St.-Germain, the Café Lilas at the corner of the Boul' Mich', the little Café Lapin l'Agile on the heights of Montmartre, while bad Bertha dropped her

eggs and spoil the scenery, human as well as architectural. . . To [French artists' fell the self-imposed task of taking the Cinema as an intellectual not emotional medium of art expression, of discussing its conditions and possibilities, writing articles in little advance-guard sheets, of founding little propaganda journals, and of realizing ideas in out-of-the-way places what time the Censor was not looking. (Lawder 73-74)

The analogy many French thinkers of the time drew, between consciousness (the mind-screen) and the cinema (the screen) depended (*pace* Bergson) on the notion that consciousness is process.

Prosthetics for the Senses: A Way to Reconcile Two Descriptions of the World

The drive to capture humans' perceptual processes was fuelled by the momentous changes alluded to above – urbanization and the rapid acceleration of the pace of change – and by another that I have not yet mentioned, one whose implications diverged from the optimistic humanism of the first two. This last factor was the development and popularization of scientific models of the world that implied that the world as it truly is (for moderns believed that science describes the world as it truly is) and the world as we see it are vastly different. Scientific models have long offered descriptions of the material realm that implied its fundamental structure is different from what we perceive it to be: the Pre-Socratic thinker Anaximenes (ca 580-ca 500 B.C.E.) proposed that a single material element akin to mist was the basis for all that is and that this element is transmuted into objects that we know by condensation (becoming thereby cold and hard, and forming earth and rock) or rarefaction (becoming thereby fiery, and forming the heavenly bodies); Diogenes argued that the prime matter from which all things are constituted is air; Archelaus suggested that all things are made up of hot and cold, mixed in different proportions. The greatest of the Pre-Socratics, Parmenides (ca. 515-480 B.C.E.), argued that reality is being, and being is a whole that cannot be partitioned, is undying, motionless, and eternally present. Thus, Parmenides' position denies change, while we experience material existents as changeable and, in fact, as undergoing constant change. Almost all the Pre-Socratic thinkers proposed that reality is essentially different from what our experience reports it as being.

The modern world view, too, maintains that the world discovered by reason and the world experienced by the senses are fundamentally different. In the modern era, however, science has taken on the role of setting the standards for reason (and we continue to do so, even though it has been shown that science performs this role poorly). As science assumed this role, knowledge of its doctrines became more widespread, and as its doctrines became more widely known, so did recognition of the discrepancies between the world as science represents it and the world as the senses report it. For ancients, these discrepancies pointed up the difference between a higher realm and the quotidian realm. However, moderns acknowledged no higher realm to which they could petition to endorse one of these representations and to discredit the other. The irremediable discrepancy between the world of the sciences and the world of the senses thus cast both representations into doubt. For moderns, there is nothing higher than sense (and the discernment of patterns in sensory reports) that might criticise illusions.

Premodern (and, to a lesser extent, early modern) metaphysics could assert that what is "really" real is the realm we learn about through the efforts of reason – a higher realm of spiritual (non-material) essences; the metaphysics of later modern era, on the other hand, could not offer any distinction equivalent to that between matter and spirit (let alone to map that distinction onto one between illusion and reality). The best modernity could do was to offer the distinction

between form (patterns of observed regularities among events) and substance and to map that distinction onto one between the loftier (because more rational) knowledge that science provides and the lowlier knowledge that the senses furnish. Because both forms of knowledge concern the same domain, that of matter, and because the former sort of knowledge (of observed regularities) has its origins in the latter (in sense data), this distinction was not strong enough to carry the belief that reason can correct the illusions the senses furnish. Moderns, then, could not petition to a higher knowledge that could correct the senses' erroneous ways (thus freeing the mind). So, although scientific descriptions of reality have long differed from the representations of the world that senses provide, this divergence became even more troubling in the modern period – and became all the more troubling the more nearly history approached our own era.

For moderns, there is nothing higher than sense (and the discernment of patterns in sensory reports) that might criticise illusions. Modernity experienced perception becoming ungrounded. On one hand, the experience that knowledge lost its basis precipitated a grave crisis: if percepts don't match the world, what is their evidentiary value? But it was also liberating – for perception could then be understood as free productivity. This connection between the understanding of perception as synthesis and the idea of spectatorial freedom has gone pretty much unnoticed. But it is a key to understanding Cubism and Futurism.

Photography, Modernity and the Crisis of Vision

The development of photography and film was a response to the crisis of vision that by the early nineteenth century had reached an alarming intensity. The camera served as a prosthetic for vision: it allowed us to see, and therefore to understand, what the human eye cannot see unaided. It contributed to the effort of giving the real a rightful place in works of art. Henri-Cartier Bresson's celebration of "the decisive moment" is the discovery of the eternal, perfect form within the contingencies of the flux of the mundane. "The decisive moment" captures exactly what Charles Baudelaire claimed would interest the painter of modern life: "By 'modernity' I mean the ephemeral, the fugitive, the contingent, the half of art whose other half is the eternal and the immutable. [...] This transitory, fugitive element, whose metamorphoses are so rapid, must on no account be despised or dispensed with" (Fracina 23). Likewise, the cinematic apparatus answered to the desire to reproduce movement so that it might be subjected to inquiry (modernity's paradigm of knowledge). As Benjamin pointed out, while Edgar Allan Poe described passers-by as casting aimless glances off in all directions, the modern pedestrian is overwhelmed with a barrage of sensory information that he or she has to keep up with, just to preserve life and limb, to say nothing of perceptual integrity. Technology has retrained the human sensory apparatus so that it can process multiple inputs.

The new perceptual regime is intimately related to the cinema, for in the perceptual world of modernity as in the cinema, the form of perception derives from a series of engendering shocks, a relentless rhythmical pulse that is the basis of modern perception and the film itself.

Moving through [the traffic of a big, modern city] involves the individual in a series of shocks and collisions. At dangerous intersections, nervous impulses flow through him in rapid succession, like the energy from a battery. Baudelaire speaks of a man who plunges into the crowd as into a reservoir of electric energy. Circumscribing the experience of the shock, he calls this man "a kaleidoscope equipped with consciousness." Whereas Poe's passers-by cast glances in all directions which still appeared to be aimless, today's pedestrians are obliged to do so in order to keep abreast of traffic signals. Thus technology has subjected the human sensorium to a complex kind of training. There came a

day when a new and urgent need for stimuli was met by the film. In a film, perception in the form of shocks was established as a formal principle. That which determines the rhythm of production on a conveyor belt is the basis of the rhythm of reception in the film. [...]

[...] Poe's text makes us understand the true connection between wildness and discipline. His pedestrians act as if they had adapted themselves to the machines and could express themselves only automatically. Their behaviour is a reaction to shocks. "If jostled, they bowed profusely to the jostlers." (Benjamin 175-176)

These shocks destroyed the aura surrounding precious objects/creations, and that changed forever humans' understanding of space and distance. Even Benjamin deemed the effect a mixed blessing.

Cubism and the Crisis of Vision

Nothing less than a crisis of vision was precipitated by three interrelated developments that impressed themselves on human consciousness in the middle of the nineteenth century: the pace of change rose to exceed human perceptibility; the proliferation of visual forms accelerated into a mind-numbing profusion; and science produced a world-picture altogether different from the image that the senses supply. Emerson expresses the state of mind that crisis brought on:

It is very unhappy, but too late to be helped, the discovery we have made that we exist. That discovery is called the Fall of Man. Ever afterwards we suspect our instruments. We have learned that we do not see directly, but mediately, and that we have no means of correcting these coloured and distorting lenses which we are, or of computing the amount of their errors. Perhaps these subject-lenses have a creative power; perhaps there are no objects. Once we lived in what we saw; now, the rapaciousness of this new power, which threatens to absorb all things, engages us. (Emerson 284)

Such a crisis of vision accounts in part (and perhaps even largely) for the acute interest, evident in Impressionism, Pointillism and Divisionism, Cubism, Futurism and Minimalism, that nineteenth and twentieth century artists have taken in the mechanics of visual perception, as well as for the rise of photography, chronophotography and film. Film and photography were born of the aspiration to re-establish us in the world of objects, and to show that objects after all exist.

The camera was developed, in response to a crisis of sensation, as a cognitive tool that served as a prosthetic for vision (consider László Moholy-Nagy's conception of the camera as a supplement for the eye or Vertov's claims about the camera). That is one factor that led the modernists to recognise that the camera's eye, including that of the movie camera, posed significant aesthetic difficulties. For if the camera was invented as a cognitive tool to reveal reality rather than to transform it into an autonomous form, then it is difficult to see how (according to the dominant aesthetic principles of the time) the photographic (or cinematographic) image can serve in constructing artistic forms – it is even difficult to see how a camera image could possibly provoke an aesthetically valuable experience.

The same crisis of vision had a major role in giving rise to Cubism as well – and these conditions were exacerbated by the character of urban existence. That those same conditions that had a role in the development of Cubism also led to photography and the cinema means

that Cubism and the cinema have a natural affinity to each other. So it is that Sergej Ejzenštejn describes an (evidently) Cubo-Constructivist theatre-piece which tried to convey the qualities of urban life – and his own testimony makes explicit that the quest to capture the qualities of urban, industrial existence propelled him into the cinema.

Cubists formulated their theories about visual perception in reaction to the Impressionists concern to depict the transient optical properties of the lighted surfaces of things. The Impressionists' methods were grounded in the belief that the momentary stimulation of the retina alone was responsible for visual perception – that is the reason Marcel Duchamp contemptuously referred to their art, and that of their precursors and followers whose art is conceptually akin to theirs, as “retinal art.” The core doctrine of the Optical Realism that began in Italy in the fourteenth century was that visual perception in its purest form – perception that allows us to see what is actually there – devolves upon our becoming more aware of the image that is actually reflected onto the retina. The Impressionists' belief that the image studied by optics is the pure image makes their conception of the image the furthest extension of the Optical Realism. What the Impressionists achieved, essentially, was to supplement the geometric optics of the Renaissance with an understanding of the optical/retinal effects of colours and their juxtapositions. And what is actually reflected onto the retina are the coloured surfaces of objects animated by constantly changing light. The Impressionists strived for “true seeing,” for a manner of seeing that is unaffected by the distortions that subjectivity so often introduces. Impressionists relied on scientific doctrines that expanded on the common sense belief that visual percepts are *donnés*, that is, they did not accord the mind a productive role in perception.

A momentous shift occurred at the end of the nineteenth and the beginning of the twentieth century. Several schools of psychologists (among whom the Gestalt psychologists are the best known) argued that our visual percepts do not simply mirror the world around us as a reflection in a looking-glass mirrors the world in front of it, or as the back wall of a camera obscura depicts what lies before it. The mind is not passive in visual perception; rather, the mind forges visual percepts from the raw material the body provides. This is true even of our most straightforward percepts. If I look head on, from eye level, at a box, I do not see a rectangle; I know from previous experience the box has three dimensions, and know that were it moved slightly to either side, a different facet would become visible. My mind (using the imagination and memory) provides images of what I do not see, so the representation of which I become aware already contains information, based in past experience, about what I would see if I moved to the left, or the right, or walked around the box, or what I would see if I were to stand on a chair and look down on the object.

Paul Cézanne's ideas and methods were an important source of the Cubists' ideas on visual perception, for he was among the first to reject the Impressionists' Optical Realism. He proposed that we do not see surfaces animated by constantly changing light – instead, he proposed that we perceive physical reality made of solid volumes in three-dimensional space. He realized, then, as did Kant and the phenomenological philosophers, that our perception of the world has an understanding of its structure built into it. Our vision of the world amounts to more than is reflected onto the eyeball. Latent understanding of the structure of existents informs it. That recognition is what led Cézanne to suggest that he might be better able to perceive – not understand, but *perceive* – the true structure of a landscape if he had some knowledge of geology.

The problem of how to depict what we perceive through this latent understanding was a vexing one. After all, the methods that Optical realism developed in the Renaissance had proved a powerful means of reducing the painted subject to what can be presented on a single, flat, bounded surface – that is, of bringing painting's subject and painting's means to coincide. The whole idea of the camera obscura, that tool that played such an important role in the

development of Optical Realism, was to reveal how the rays of light reflected from the surfaces of worldly objects project onto a flat surface. Cézanne reopened the gap that had existed before the Renaissance between the painting's surface and the three-dimensional world on which the painting was modelled..

If Cézanne's methods recreated a problem that painters of the early and high Middle Ages had faced, but methods of Optical Realism had obviated, his solution was not entirely different from that of his mediaeval precursors. Mediaeval artists did not think of painting as, say, Leone Battista Alberti did – that is, as a transparent window through which we look out onto a section of the visible world; rather they understood a picture to be a material surface covered with lines and colours which can be interpreted as symbols of what lies outside the painting (whether that “outside” be of this world or of another). Cézanne conceived painting similarly, as a construction of volumes; the way these volumes are juxtaposed or overlap suggests (but does not depict) the spatial relations they have to one another (rather as the way Cézanne used blue suggests, but does not depict, the effects of aerial perspective). Cézanne's interest in rendering the spatial relations among objects led to his inventing a device that would have enormous influence on the way that the early Cubists would resolve the objects their canvases represented into many facets: Cézanne would shatter the contours of the object he painted, only to reaffirm their outlines subsequently. By doing so, he made the surfaces of his canvases pulsate. Granted that Cézanne's “means of expression” (as he called his manner of realizing his conceptions about visual perception) still concerned themselves with the relation between the canvas' two-dimensional surface and the world's three-dimension space, as the means of the mediaeval painters did not, but both sets of means have a shared characteristic: the commitment not to present what they are about but to “symbolize” their referents (i.e., to refer to them by non-iconically).

Thus, Cézanne wrote to Emile Bernard:

. . . [T]reat nature by means of the cylinder, the sphere, the cone, everything brought into proper perspective so that each side of an object or a plane is directed towards a central point. Lines parallel to the horizon give breadth, whether it is a section of nature or, if you prefer, of the show which the *Pater Omnipotens Aeterne Deus* spreads out before our eyes. Lines perpendicular to this horizon give depth. But nature for us men is more depth than surface, whence the need to introduce into our light vibrations, represented by the reds and yellows, a sufficient amount of blueness to give the feel of air. (Cézanne 37)

The traditional idea that Cézanne refers to here, that God spreads out the world before us as “a spectacle” was one that would soon be repudiated – and its repudiation largely determined the visual culture of late modernity. But what is important for our purposes, now, is to realize the full weight of Cézanne's reductive methods: the proposition that nature should be treated “by the cylinder, the sphere, and the cone” is the most famous and most frequently quoted of Cézanne's assertions, and it gives clear evidence that he did not want so much to depict reality as to present an equivalent of its underlying structure. It offers a principle concerning the means to understand the world's structure as a system of interrelated, solid, tangible volumes. Cézanne's statement that red and yellow serve in his work to indicate the vibration of light (the subject matter of most Impressionist painting) also gives evidence that Cézanne's concern was less with presenting an accurate likeness as a “symbolic structure” (in the Peircean sense of “symbol”, of a sign that is neither iconic nor indexical). It reveals, too, how Cézanne moved away from using *chiaroscuro* for modelling effects, as the optical realist painters had.

By rejecting the Impressionists' concern to capture the momentary play of light over coloured surfaces, and their ideas about the role that retinal impressions play in visual

perception, Cézanne opened the way for appearance of a much greater degree of architectural solidity than was characteristic of the paintings of his immediate predecessors. In his still-lives, Cézanne often increased the volume of an object by viewing it from an unexpected angle – and to do so he had to represent the particular object as though from a different vantage point than that which organizes most other parts of the painting. A related means of increasing the mass of the object Cézanne employed was to, say, tip a table-top forward, so that instead of appearing as an object receding into three-dimensional space, it became a massive, trapezoidal-shaped plane tipped into a shallow space. By these means Cézanne imbued the subjects of his paintings with an extraordinary monolithic quality, even while they seem to pulsate with life. By 1906, in such works as *Jeune femme à la chevelure*, Picasso had adopted Cézanne's ambition of depicting more monumental figures than we find in Impressionist painting. This ambition, which also helped inspire the famous *Les Femmes d'Alger* of 1907, probably stems from Picasso's interest in archaic art, pre-Columbian art, ritual objects from the Congo and the sculpture of the Ivory Coast – art with which Picasso had acquaintance through his Spanish roots, for Spain had long been culturally detached from the rest of Europe and had maintained its contacts with Africa, with Semitic cultures, and with New Spain.

Though Cézanne moved away from the Optical Realism of retinal impressions, he did not renounce realism altogether. He strived instead for a realism committed to truthfulness to the psychological process of visual perception. A process unfolds across a span of time, and not in a single moment; so Cézanne's painting method was to observe some motif over time and then to distil these separate acts of vision to a residue that was almost as much conceptual as perceptual. Some several of these distillates would constitute the subject of a single painting – this is the reason Cézanne, famously, required a hundred separate painting sessions to create a landscape and one hundred and fifty separate sessions to produce a portrait. He would then organize these worked-over motifs into a tightly integrated composition, and in the course of creating such a complex unity, he would inevitably rework them, reshaping them in the interests of formal contrast or the realization of overall form.

To suggest the span of time over which visual perception is formed Cézanne developed means that dismembered the one-point perspective system that had been the foundation of Western painting since the Renaissance. The different motifs (and sometimes even parts of the same motif) would recede towards different points, suggesting they were viewed from slightly (and sometimes more than slightly) different vantage points. Such an approach threatens to produce a confusion of forms.

Now, being old, nearly 70 years, the sensations of colour, which give the light, are for me the reason for the abstractions which do not allow me to cover my canvas entirely nor to pursue the delimitation of the objects where their points of contact are fine and delicate; from which it results that my image or picture is incomplete. On the other hand the planes fall one on top of the other, from whence neo-impressionism emerged, which circumscribes the contours with a black line, a fault which must be fought at all costs. But nature, if consulted, gives us the means of attaining this end. (Cézanne 39)

Here Cézanne refers to his use of “empty” spaces – areas of spatial ambiguity which effect the transition from one plane to another. To fill in these spaces would cause objects on different planes to abut, and call for something as abhorrent as circumscribing the contours of objects with a black line (here Cézanne refers to the *cloisonniste* techniques developed independently by Vincent Van Gogh and Cézanne's correspondent, Emile Bernard and carried furthest by Paul Gauguin, who got most of the credit for them), to keep the planes separated. The means Cézanne developed to disarm that threat was to hold surface and depth together by *passage* (“*passage*” refers to the fusing of facets by allowing one coloured plane to bleed into the next;

thus, *passage* often had the effect of allowing one physical object to penetrate another) – by running together planes that are separated in space.

Like Cézanne, Cubists tried to convey the dynamic process that produces vision by synthesizing various points-of-view on a single object. Robert Delaunay's *La tour Eiffel* (1911) provides an easily understood example, but it is common in Cubist painting of high Analytic phase. Picasso employed this technique before the Cubist period: as early as 1906 he combined a profile view of the nose with a frontal view of the face, and his *Les Demoiselles d'Avignon*, finished in the middle of 1907, presents, in the two central figures, that same combination of a nose in profile and a face viewed frontally – but, more radically, on the figure on the lower right, a mask-like version of a woman's face, breasts and back, all run together in the same figure. Even that early Picasso's use of multiple vantage points and of *passage* was far more radical than anything that Cézanne imagined. *Les Demoiselles d'Avignon* also provided evidence of how radically Picasso dismissed *chiaroscuro*: Picasso modelled the head and breast of the figure on the upper right by using blue bands of colour and, to suggest the nose's relief, created bands of red and green, where Optical Realist painters would have used *chiaroscuro*.

In the following year, 1908, and after seeing *Les Demoiselles d'Avignon*, Picasso's collaborator in Cubism, Georges Braque, produced *Grand Nu*, a work that also traded in the spatial ambiguities of *passage* and that combined, in the figure of its title, several different points of view. This painting, however, remains a transitional work, showing his progression from the Fauve style he had earlier adopted and the Cubism of his subsequent works; while Cézanne's influence is clear, that of Matisse still stronger. His *Maisons à l'Estaque* (1908), the most famous painting from a series made in the same year at L'Estaque, a town where Cézanne had often painted, reveals a more thorough assimilation of the use of *passage* and of multiple viewpoints.

The conviction that the mind constructs a perception, and does not merely register appearances, is an idea that helped generate Cubism. Picasso's *Femme nue au bord de la mer (Baigneuse)* of 1908, a painting in which some of Picasso's characteristic constructions appear for the first time, presents a figure in a frontal, three-quarters view, but turns the nearer hip so that it is flush with the picture plane, and twists the buttocks even farther, so that the buttock on the far side of body also comes into view. This twist brings the nearer leg into side view, which creates the impression the leg has been detached and rejoined anomalously at the hip; to balance this twist, Picasso introduces an unnaturalistic crook into the far leg, to draw it up to picture surface and increase the impression of volume it creates. These transformations have the curious result of making both the pubis and the buttocks, both the belly and parts of the lower back, visible simultaneously. A common subject of classical painting was The Three Graces, who were as often as not presented as three nude women with their arms on each others' shoulders, the two women on the outside of the line facing towards the viewer, the woman in the middle facing away, her back turned towards the viewer. (A drawing of 1905, *La Lola*, reveals how much Picasso's method owed to the theme of The Three Graces.) One reason for the appeal of this subject is that it allowed the painter to present a female nude both from the front and from the back, and so to convey the female form in the round. Picasso developed identical sculptural interests through his use of multiple viewpoints, and he extended the means of realising this interest by combining the different aspects into the representation of a single form – combining the different aspects in a single form also had the advantage of heightening the tensions amongst the various aspects. In a stunningly brilliant (nearly book-length) article on Picasso, "The Algerian Women and Picasso at Large," the great art critic Leo Steinberg writes of *Femme nue au bord de la mer*, ". . . we are dealing merely with a diagrammatic symbolization of volume, a graphic device for maximum density of information. Ambiguous simultaneity is part of Picasso's essential approach to the rendering of the external world." (Steinberg, 191) Picasso's art was oriented towards the subject, and he quickly realized

that the value of the techniques he had developed was to allow him to superimpose different aspects of the objects almost calligraphically, in a single “simultaneous” image (to use a descriptor that many early twentieth-century artists found appealing); it also allowed him to diagram a higher reality, in which all these aspects appear simultaneously.

Most of us know the subsequent history: Picasso’s paintings from the summer of 1909 – first in paintings done at Horta, and even more the series of portraits that followed – show him to be very concerned with possibilities of exploiting volumes for their own sake. These paintings use many vantage points, so Picasso could dislocate any mass, rotate it any which way, or otherwise transform it, to endow it with volume. This was the basis for Picasso’s method for the next several years. During this time, he would push further and further the process of disassembling the object into facets, each of which could be rotated independently, as though it were seen from a unique point of view, until the method threatened to eliminate the subject altogether – he then would regroup, giving full weight to the subject, and then advance again towards form purified of representation.

In the works Picasso did soon after, the reconciliation of the elements to one another takes primary importance, and the extrinsic references become ever more cryptic. The point I want to make through all of this is that while Cubism began as an effort at a higher realism, its progress rehearsed the epistemological crisis that the nineteenth century had experienced: the scientific description of reality (compare this with the Cubist geometric construction) became increasingly detached from its supposed referent, and as that referent lost the authority that had once belonged to it by being taken for the real, the internal demands of the construction of the model and the relation of part-to-part and parts-to-whole became paramount. The synthesis of geometric form – the very activity of effecting that synthesis – became the paramount factor: it is as though the mind’s effort to construct order serves as a last ditch effort to keep chaos at bay.

This is where we may return to the claims about multi-screens.

Technology and Art, Again!!!

We are all familiar with the arguments by now: digital mediation has brought the open form work to fruition. Digital mediation has brought forth a new reality in which the work whose reception has been transformed into a unique act of production can never be fully determined. The excited claims for the novelty of new media often devolve on their peculiar brand of narrative theory: digital media require new, non-determinate narrative forms: every act of reception will be a free act, in which the individual viewer will create a unique narrative – sometimes, preposterously, this new form of narrative has even been given a gender: that of the female. For it is males, all males and only males, as we all know, who want to dictate to others how they should experience.

For these aroused new media theorists, the potential for interactivity and/or practically infinite variability has rendered the reception of the narrative work unique to each experience of that work (whether the differing experiences of the same work by different people or the experiences of the same person at different times). The argument continues that these qualities of the new work separate traditional notions of narrative as a fully formed or completed account of reality, from a new ideal of non-linear work that can only ever be provisionally realized through each act of reception. Implicit is the idea that the indeterminate form of the new digitally mediated work renders the idea of traditional narrative obsolete, shifting the emphasis in the meaning of a work from the formal or expressive qualities of the object to that of its experience in reception. The Georgia Institute of Technology is one of the centres of this sort of work. Here is a passage from a paper (by Nitin Sawhney, David Balcom and Ian Smith) that won a prize

from the Association of Computer Machinery, about a work of this sort.

As the user moves through conversations and makes choices, the spatial and narrative contexts necessarily shift: videos play in different portions of the screen or concurrently, suggesting relationships between the clips based on proximity, movement, and absence; text appears and disappears, ghosted annotations and mock dialogue-revisions. These shifts and events appear based on user interaction, or are intentionally hidden. The same clip may play during a “car crash” narrative line as would play during a “do you remember me?” narrative sequence. The clip stays the same-the context changes. By recontextualizing or repositioning identical clips at several points in the program, we are shifting the meanings of our media, asking the user to engage in building the text and context, making meaning.

In HyperCafe, there is an inherent determination to make all chance encounters of the videotext meaningful. The navigation is thus always “contingent” and the reading is subject at every moment to “chance alignments and deviations that exceed the limits of any boundaries that might be called ‘context.’” [Terence Harpold, “The Contingencies of the Hypertext Link,” *Writing on the Edge*, 2.2. University of California at Davis, Spring 1991, pp. 126-138.]. J. Yellowlees Douglas, in charting the “narrative of possibilities” of afternoon, a story, describes the experience of visiting the same space four times and not realizing the words were the same, that only the context had changed [Douglas, J. Yellowlees. “Understanding the Act of Reading: the WOE Beginners' Guide to Dissection,” *Writing on the Edge*, 2.2. University of California at Davis, Spring 1991, pp. 112-125]. Douglas uses afternoon and WOE, also by Joyce, as examples of Umberto Eco’s concept of the open work, or a work whose possibilities even on multiple readings are not exhausted. When the user’s session with HyperCafe ends, contingencies remain, based on “indeterminabilities operating between the gaps of the reading” [Harpold: 1991], leaving behind the possibility of an unexhausted, if not inexhaustible, text. (Sawhney)

Multiple screens are often understood as involved in a similar sort of enterprise, highlighting for the viewer the act by which he or she constructs meaning, through the act of configuring an array of elements into a unique constellation.

However, the idea of highlighting the synthetic act that is perception/experience is not unique to new media as we have seen: an extraordinary work, created two decades before digital media were taken up with the current enthusiasm with which we are familiar, made by an artist who now spends much of her time in Montreal, developed out of similar aspirations for indeterminate narratives constructed through the reader’s activity. I refer to Carolee Schneemann’s *ABC – We print anything – in the Cards*. The work is a small, little-known masterpiece. Printed in individual sheets of different color paper, *ABC – We print anything – in the Cards* is the quintessential experimental (readerly) book, for it requires the reader not only to leaf through its pages but to perform it. Although its subject matter is quite simple – a love triangle – Schneemann weaves her narrative with many layers: the book is a compilation of sorts of personal journal, fragments of fiction, and a collection of friendly advices received in the midst of a personal crisis.

In its “book” form, which appeared in 1977 – I specify this form because the work also is incarnated as a performance piece – the piece contains 318 index-sized cards arranged with one text card followed by a photograph card (139 in total), all placed in a handmade, blue, cloth

box tied with a ribbon. The text is printed on three different colored cards: the pink cards contain comments by friends; the yellow are diary extracts and elements of her dreams that reveal truths; and the blue cards contain comments by A – the partner who was leaving, B – the one who was arriving and C – Schneemann herself. Schneemann intended this loose card format to allow for an open-ended reading of the work by shuffling the cards and reading them in a chosen or random order:

I ordered the sequence very carefully in terms of elements of the time. I wanted one of the cards to say now you can shuffle. So I needed to establish an order and it has to do with certain kinds of rhythms and implications and dynamics within the statements and the fragments of the relationships. But then it's planned so that anyone can shuffle it, just like a deck of cards. You can start anywhere and end up anywhere. It's a broken novel. (Wentrack: 2)

The cards, however, are numbered, so that one knows the intended order. Numerous conversations and stories intertwine and separate as a story line starts, is suspended, and then resumes several cards later. The work presents itself as so many discrete parts, and so the viewer/reader strives to make relationships between cards, and between cards and photographic images, to understand the complex interrelationships taking place. The order of the cards continually changes, reflecting life's processes: we experience the relationships and all the uncertainties around them.

There is another way of describing the most profound implication of this shifting order, one that I believe is truer, but not as frequently articulated. This other way is to say that the work, composed as it is of fragments, highlights the process of forming a narrative and (what is more important) of forming a perception. The possible ways of formulating a perception from the given array of possibilities are many – indeed their number renders perception troublingly uncertain.

The photographs date from the year prior to the performance and often make reference to textual elements. For example: "A. told C., that he'd insist on just one thing – B. was not to wear his moccasins," is accompanied by a photograph of those same moccasins. Other conversational fragments, excerpts of daily life, are accompanied by photographs of Schneemann with A. or B., which offer insight into the dynamics of the relationships. The work also includes ancient goddess sculptures reflecting the artist's research of early matriarchal civilizations. One intriguing story line reveals Schneemann's sexual desires. Other times the references are more oblique, a nude image of Schneemann is paired with "The women agreed their energies should be directed to their personal strengths and creative will, not to an idea of 'happiness'."

The title of the performance work and book offers numerous connotations. "ABC" not only represents the protagonists of the narrative, it references childhood learning and the education process of those involved. "We Print Anything" speaks to the unusual subject matter played out through the cards, the unfolding of an intimate and difficult moment of a relationship ending and the tentative beginning of a new one. "In The Cards" adds a sense of prophecy as if the stars knew the outcome and they could be revealed in the cards.

A proleptic comment is in order. Some readers might be inclined to rebut my claims that new media have contributed nothing new the indeterminate forms recent artists have contrived.. Against this claim, some want to argue that while the idea of indeterminacy was "in the air" from the early 1910s to the late 1960s, the idea was inadequately embodied before the development of digital technologies. Some might even want to claim, as I have argued about photography, that it was the discrepancy between the new artistic ideals and existing media – the inadequacy of existing media to embody these ideals – that summoned a new medium into being. To refute

this possible rebuttal, I highlight the unquestionable richness of the works that this position would disparage. For it is difficult to argue that the forms contrived to realize the ideal of indeterminacy betray these goals when they are as rich as the works of Carolee Schneemann, John Cage, or Iannis Xenakis have been. Thus, I continue to insist that far more plausible than the assertion that digital technologies have brought forth novel artistic forms that serve novel ends is the claim that these forms rehearse ideas that derive from an epistemological crisis that is now well over 150 years old. Even the artistic responses to this crisis were already familiar almost 100 years ago. The implied critique new media works offer of narrative arises from the historical conditions of late modernity; and the use of multiple screens new media artists have made simply re-enacts that stage in the saga of modernity's unhappy consciousness when the idea that a percept is a *donnée* gave way to the understanding of perception as a form of production. Indeed, Eco, in by far his best work, *Opera aperta*, attaches this crisis to an even earlier trauma/transformation, one evident in the contorted forms of baroque art. For Eco, the shift from the essence to appearance in architectural and pictorial products is symptomatic 'of a new scientific awareness' that mirrors the Copernican vision of the Universe. Copernicus 'de-centred' the universe. With Copernicus, the fixed theo-centric order and the geo-centric cosmos gave way, and as they did, the world emerged as an object for the human subject and was considered no longer the object whose reality depends on its being apprehended by an all-seeing God. That world appeared in a state of flux – loosened from its tether to a governing theological doctrine it presented itself as a mystery to be solved through impression and sensation. A trend toward spatial illusions, theatrical imagination and intense feelings, where an image is a representation of the thing it represents through a different relation of meaning – a trend toward a kind of 'psychological realism' rather than through mimetic likeness or literal resemblance – marks the period. Or rather, I would say, a trend not just towards a kind of psychological realism, but also towards the conception of the mind as theatrical operation, putting a scene/seen on display. Towards, that is to say, seeing and imaging emerged as production.

The forms that we are exploring in this collection of papers are forms that emphasise that the world we understand is the world we construct – that emphasise Vico's truth that "factum vera est." Technological determinism has little of interest to say on this topic. It is far more revealing to discuss these forms in light of the epistemological and cultural factors that have given rise to them.

Endnotes

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