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(*The paper formerly know as* Good Vibrations: Time as Special Effect)

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1. Why digital realism is not indexical

I've been discussing time and digital media for a while now. It strikes me that alongside arguments we need to make about, for example, the crash as a specifically digital temporality that brings the ephemeral to centre stage, we also need to understand what history means, no longer as a mode of monumentalisation, but as a coming to terms with the kind of loss that confronts us everyday when a freeze or a crash takes our hard work away. As it happens, I bumped into an essay a few days ago that provides the opportunity to think over the larger scale implications of transience as a characteristic of digital aesthetics.

The essay appears in a new publication from the Edinburgh College of Art, *TwoNineTwo*. In the opening essay of the launch issue, Paul Willemen asks some searching questions about the risks that emerge as the digital media alter the indexicality of the analogue. In the process of analysis he returns to Eisenstein, because of

> the suspicion that sooner or later, some techno-fetishist is bound to invoke, abusively, Eisenstein's name in a celebration of the internet or computer-based art. I suspect that for this abuse of Eisenstein, his particular notion of mimesis, commented on by Misha Yampolsky in *Eisenstein Reconsidered*, will be invoked. Yampolsky quoted Eisenstein's speech to the filmmakers of La Sarraz in 1929: "The age of form is drawing to a close. We are penetrating behind appearance into the principle of appearance. In doing so we are mastering it." Yampolsky then went on to argue that for Eisenstein, the issue was to represent "the essential bone structure" underpinning and shaping reality rather than its surface appearance. No doubt some techno-fetishist will latch on to that formulation to claim that this is precisely what digital imaging and 'new media' enable. This claim may be further elaborated with reference to Eisenstein's emphasis on drawing, painting and the iconic quality of the cinematic and the photographic image (Willemen 2000, 7–8).

My interest is piqued, since I quoted this rather obscure article from a 1988 volume of conference proceedings in my book on Digital Aesthetics a few years ago. This was how I deployed the quote in a chapter on Virtual Realism, part of whose mission was to establish that mechanical perception in both analogue and digital forms retains its indexical quality through the relationship established among images, a relationship which, I argued, forms a 'society' which enables a socialised mode of communication otherwise disenabled by the hyperindividuation characteristic of accelerated modernity.

> In his debates with the radical Kino-Eye director Dziga Vertov, Eisenstein replied to criticisms that his story-films were in hock to the fictionalisations of the entertainment film by critiquing Vertov's espousal of the documentary. Raw reality, unorganised, could never achieve maximal effectivity, and could never form part of the overall subordination of the film's moments to its architectonics, its montage (Eisenstein 1988). Instead, Eisenstein argued the case for a cinema which would escape the magical powers of mimesis through an emphasis on composition, on the mise en scène, the frame, the shot, the editing and the whole film. Documentary was mere imitation. Like the sympathetic magic that drives a betrayed lover to destroy photos of the philanderer, or the symbolic objects surrounding a dead pharaoh, or the stock markets trade in "objects that only exist on paper," for the documentary, "The difference between form and reality is non-existant" (Eisenstein 1993, 68). The speculative regime dreams of managing reality through formal manipulations. But these magical administrations, in mirroring form alone, ape events without grasping their structure. In their place Eisenstein argues for a vision that pierces the secrets of matter, that reveals what lies beneath the surface, the bones beneath the skin (see Yampolsky 1993). He declaims "Mastery of principle is the real mastery of objects" (Eisenstein 1993, 67), and in an early draft even speaks of "Man as means." Not even the human is sacrosanct in the demand for a visual art dedicated to unearthing the paucity of the present and the immanence of the future... Eisenstein's purpose as pedagogue and practitioner was to move from [the] purity of autonomous illumination to a social relation between filmmaker and audiences through the establishment of a social relation between shots, a relation which would transform the contents of the individual frames or the sequence. In place of the economic model of exchange, Eisenstein aims for the social model of dialogue between frames. Unlike Baudrillard's succession and erasure of every image by the next, Eisenstein creates a society among his images. However, the internationalist ambition of Eisenstein's cinema bred a sense of cinema as universal language, or more specifically, a universal translation machine,

> whose purpose, to join human to human in the revolution, transcended and subordinated the claims of images to their own reasons for being. In the attempt to make a generalisable technique, montage falls prey to rationalist universalism (Cubitt 1998, 43–4).

The model in the back of my mind was that proposed by Walter Benjamin in his essay "The Task of the Translator," which offers a metaphor which seems as apposite to the transitions between analogue and digital as it is to both the problem of translation and the ethics of interpretation:

> Fragments of a vessel which are to be glued together must match one another in the smallest details, although they need not be like one another. In the same way a translation, instead of resembling the meaning of the original, must lovingly and in detail incorporate the original's mode of signification, thus making both the original and the translation recognizable as fragments of a greater language, just as fragments are part of a larger vessel (Benjamin 1969, 78).

The great difference between the Eisenstein and Benjamin is that the latter believes the universal language is made in the process of translation, while for Eisenstein it is already presumed as a Leninist class faculty that needs only to be mobilised in the machinery of the Party.

One of the problems with Willemen's approach is that it defines its aesthetic in terms of indexicality: in terms of visual coding. This is already weak as a way of understanding some key codes of cinema, especially editing but also music. It is entirely too parochial a view for digital aesthetics, which is only partially visual. It is also, very obviously, sonorous. Crucially, it is also dependent on a set of practices which humanist intellectuals have become loath to discuss: practices associated with the workplace, notably cartography, cataloguing and double-entry book-keeping. In geographic information systems (GIS), statistical data is arranged in correlation with spatial data to provide maps for scientific and marketing purposes; the database is an extended catalogue that adds record-keeping, filing and complex, multi-dimensional records to the old index card, and uses early twentieth-century concepts of library information retrieval to power search engines and bots; while the accountancy procedures became the Lotus 1-2-3 definitive killer app for the first desktop machines. In this context, trying to define digital media by analogy with storytelling and realist depiction is like trying to define an ocean liner by means of its furniture.

Most of all, however, the humanist approach advocated by Willemen misses entirely what Gelernter (1998) calls the aesthetics of computing:

the specific elegance, simplicity, effectiveness and sheer aesthetic pleasure of software design. Why is Windows 2000 so much less attractive an environment than Mac 1984? Why is Word 98 the clumsiest of all possible word-processors (with the exception, of course, of the next version of Word)? Gelernter uses Ted Nelson's term, "featuritis." Critical Art Ensemble (1996) use the phrase "redundant functionality" for the same phenomenon: the excrescence of features and functions added on to the basic programme, ostensibly to increase its usefulness but actually to get it to do useless and unwanted actions that eat memory and clutter the screen with pointless objects and unnecessary advice (I particularly dislike Word 98's desire to correct my English and its presumption that I want to edit whole words rather than individual letters—yes I know I can turn it off, but it takes fifteen precious minutes burrowing in appallingly nested sub-menus to find the button, and meanwhile I can't even preview the font menu).

Digital aesthetics has to do with the engineering and technology of computing as well as the superfices of image and sound: the Jodi site, for example, makes a wholly different sense if you use View Source to dip into the code beneath the apparently random scatter of blinking ascii characters. What is at stake is code, not representation. Tim Druckrey's 1995 Ars Electronica paper catches a critical aspect of this when he argues that "Programming determines a set of conditions in which the represented is formed as an instruction, while language destabilizes the conditions through the introduction of formations in which the represented is extended" (Druckrey 1999, 311). The imbalance of instruction and extra-textual formations forms a new crisis in the theory of representation, itself already reeling under the twin blows of consumer capitalism and the dead-end theorisation of simulation. The act of interpretation does not become impossible, faced with the interminable question of the truth of the representation, but becomes necessary, since the construction of truth now becomes an extra-textual effort engaging anyone who comes into contact with it.

As anyone who has ever struggled with a balance sheet will know, accountancy is a creative art. Without abuse of the facts, there are legitimate ways in which a company's performance can be shown to have resulted in a profit, a loss or a break-even, according to the audience for whom the figures are intended. A struggling charity, for example, has to avoid profit in order to keep its tax status, generate loss in order to attract key funding, and show profit in order to keep its directors and its bank manager happy. This is achieved not by changing the facts but by using different formulae to account for them. The spreadsheet has become a hermeneutic engine for testing out possible modes of account-

ing for a year's trading: to ensure that a movie makes a record profit for *Variety*, but nevertheless never succeeds so well that players with points in it take significant revenue streams. It's illegal to alter the facts but massaging them is the reason we pay for accountants. The effort it takes the lay observer to grapple with these issues and to run through the what-if scenarios that accountants love is precisely the operation Druckrey hints at: the difference between instruction as machine coding and interpretation as the destabilisation of encoding in language.

The digital, like the accountancy spreadsheets that are such a feature of it, is indeed indexical, but it is not engaged with the visual regimes of resemblance, rather with semblance as such, which, considered as the execution of a set of instructions, is also doubled by a mimetic performance, rather as a recording of a piano recital is a semblance of the score but a mimesis of its execution. In fact the digital record is less perfect than the analogue, or rather has abandoned the claim to perfectibility of the analogue—and this at its heart, not in the technoboosterism of "very soon we will be able to..." that Willemen quite rightly castigates—though for the wrong reasons. To extend the metaphor of the piano recording, the mimicry of idealised acoustic conditions in the recording studio chronicled by Chanan is wasted effort: as Altman argues, the fallibility of playback ensures that the acoustic I hear is the acoustic of my living room, not that of the Cleveland Orchestra. In effect, the greater the attempted control over reproduction, the more control is handed over to the receiver, who is thereby forced into the position of interpreter. This is just one aspect of the democratisation process in the digital domain.

Indexicality is in any case only one aspect of a cinema which, in the digital era, is also transformed as to its iconic and symbolic functioning. Willemen makes a play for the centrality of Charles Sanders Peirce's category of the index in film but does so in a naively realist tradition that ignores the power of Peirce's semiotics as a triadic rather than Saussurean and binary structure. Willemen wants a 'return' to the index, claiming that any image taken with a camera has an irreducible relation with embodied and physical reality which is precious, vital and political, and which digital media have destroyed. But a little media-social history will help understand why the index was never unique and never an unmitigatedly good thing. The camera and wet photography throve in almost exactly the same chronological period as the ideology of privacy. One of the cheerier ways of looking at the 'death' of photography is that it coincides with the termination of bourgeois individualism and its abuse of identity and its sacrosanctity as a defence for private dishonesty and domestic violence. The rise of the manipulable image and the emergence of a manipulable (schizophrenic) self are synchronous developments:

what is occurring is not the end of truth but the end of an ideology of identity. Identity of the subject to itself has acted as the ground of truth since Descartes, and it is this ground that Willemen mourns. The law too has been grounded on the concept of individual identity as the basis of truth in arguments over privacy, intellectual and private property. As the measure of truth as identity breaks down—the Microsoft trial is a wonderfully public forum for demonstrating the imbecility of identifying truth with property—the rewriting of photographic truth becomes symptomatic of a global and highly political change in the nature of truth, identity and property. The logic of the digital, with its ease or surveillance, fraud and hacking, denies the sole right of ownership: if anything, the digital belongs, in its wider sense, to the dialectic of liberation in a way which a century of cinema has clearly failed to achieve. If the digital is no longer a credible medium for indexical representations, what does this mean for the surveillant regime of the passport photograph? Surely it requires more than an education that promotes "assessing the 'likely' verisimilitude of any account or representation of the world" (the scare quotes, which are so revealing, are Willemen's own): surely it demands an education based not on picturing and mastery over the world, something more like an education based on the power to communicate in a globally interdependent society?

There's another curious and rather typical elision in decrying blockbuster cinema as 'physical sensations' as opposed to the 'emotive-intellectual' cinema. The 'sound prisons' of club culture Willemen vilifies can surely be understood analogously as the utopian if temporary promotion of psycho-somatic wholeness in an age in which its very possibility is erased in daily life. But just at the moment in which you think you have caught the argument: digital media are too embodied, too physical, not intellectual and emotive enough, we discover that the tirade will be directed towards the exclusion of embodiment from digital media. What is going on inside this apparent contradiction?

What Willemen seems to be missing is the negativity of the body in contemporary society, joining in the industrial production of nostalgia for real bodies that began in the gay clubs and gyms of the 1970s and now permeates commercial culture. Willemen's love for the lost bodies of an imaginary working class, his promotion of their images as innocent triggers of 'intellectual-emotive' responses, reeks of the closet. The only way the body can permeate the cinematic OR the digital; is either as data-image (Mark Poster's [1990] term for the cloud of statistics which gathers around any participant in consumerism) or as absence. If anything it is the latter that marks the genuine digital art of the late twentieth and early twenty-first centuries. We cannot wish away the division of body and

mind effected in the foundations of modernity—that wishing is characteristic of the bogus, content-full utopia castigated by Bloch and realised in the fashion industry with its cheesy evocations of blue-collar sweat in the processing of gym-and-isotonics-sculpted models. The contemporary body is itself untrustworthy and beyond the realms of truth because it is every bit as manipulable as the digital image of it. The body no longer counts politically: it is a construct of a historical process of abstraction noted already by Marx in the sublimation of labour power from the labouring bodies of the proletariat. The body becomes a disposable good under industrial capital, and an investment under finance capital. On the way, it moves from reproductive to service to consumer sectors of the economy, concluding an arc from use via exchange to sign. In the re-engineering of contemporary capital, even that level of value is subsumed within a higher order of abstraction, that of the statistically normative database, where the body takes on the role of statistical fiction. The operation of digital media in recording, analysing and extrapolating from data is not an attack on indexicality: it is the new order of the index, and one entirely in tune with a trajectory already established in the twist of photography towards the instrumental rationality of the surveillance state in the middle of the nineteenth century. It is only a higher order of realism.

Like so many Luddite commentators, Willemen pretends to be obsessed with work, but not with looking at the changing conditions of work. Instead his major concern, like those of Kirkpatrick Sale (1996), Neil Postman (1992) and Sven Birkerts (1994), is with protecting the rights of an intellectual caste defined only negatively but disallowed the negating role that a true dialectical model would demand of them. Such arguments are stranded defending what Caldwell had already defined in 1939 as a dying culture. In fact, what all four fear is not the demise of indexicality but the rise of iconicity, "the diagrammatic sign or icon" (Peirce 1991a, 181). But what if the true connection is, or the possible or potential relation were, symbolic, "which signifies its object by means of an association of ideas" (Peirce 1991a, 181). This after all was Eisenstein's basic tactic in the montage aesthetic. The problem is that the symbolic relation in film turns indices into symbols—the image of this babushka becomes the type of all victims of Cossack oppression (and incidentally all Cossacks are denied specificity). Willemen's intellectual-emotive cinema is itself at odds with the embodiment he ascribes to indexicality, because every photographed body, as soon as it escapes from the purely representational regime of the index "without definition" (achieved for the first and last time in cinema in the Sortie des usines Lumières) becomes symbolic, and as such throws itself into the regime of "association of ideas or habitual connections" (Peirce 1991a, 181)—the realm of metaphor OR, and this is

the danger Willemen fears, the realm of ideology. Here is how Adorno expresses it:

> [M]ontage disposes over the elements that make up the reality of an unchallenged common sense, either to transform their intention or, at best, to awaken their latent language. It is powerless, however, in so far as it is unable to explode the individual elements. It is precisely montage that is to be criticised for possessing the remains of a complaisant irrationalism, to adaptation to material that is delivered ready-made from outside the work... the principle of montage therefore became that of construction. There is no denying that even in the principle of construction, in the dissolution of materials and their subordination to an imposed unity, once again something smooth, harmonistic, a quality of pure logicality is conjured up that seeks to establish itself as ideology. It is the fatality of all contemporary art that it is contaminated by the untruth of the ruling totality (Adorno 1997, 57).

Adorno's complex dialectic needs a gloss: montage abstracts elements—shots—from their place in order to subordinate them to an artistic plan. In doing so it at once deprives them of their rational place in the world, but simultaneously supplants that with its own rationalism, an obverse of the instrumental rationalism of which it is attempting to be the negation. But because montage fails to analyse and expose the elements, it fails because they bring with them their existing ideological associations, now freed of the complexities of their existence outside the constructed artwork.

We can use another of Peirce's triads to explore this in a different light:

> The First is that whose being is simply in itself, not referring to anything nor lying behind anything. The Second is that which is what it is by force of something to which it is second. The Third is that which is what it is owing to things between which it mediates and which it brings into relation (Peirce 1991b, 188-9).

Untouched by the camera, the peasants' toil is firstness. Imaged, it becomes secondness. Assembled into a montage with other shots between which it mediates, it becomes thirdness, a language latent in the peasants' existence, but exclusive of the peasant. What Willemen seems to want is for peasants to be equally present in labour and in montage, but for that to happen the peasants must recognise that they are already mediated entities, not 'natural,' pre-linguistic or more properly pro-filmic ones. Adorno voices two fears. Firstly, in montage, the stage of secondness

infects that of thirdness—the tragic crucifixion of the peasant to the land as eternal verity in the style of Millet's *Angelus* or the cunning born of bitterness and tragedy in more contemporary accounts. Secondly, whether or not the montage takes account of the trailing ideologemes associated with the shot, the shot is assembled into a whole which, as artwork, aspires towards a totality which both subsumes the peasants' reality and mirrors, albeit negatively, the rationalist universalism of the society it attempts to critique. I've been using a related argument in a forthcoming chapter on problems of convergence in multimedia: neither hierarchical nor organic metaphors hold good of the democratising principles of emergent media, but montage only works if either its audience can be presumed to share the value system that powers the construction of the montage (as in MTV editing and televisual flow in general), or by irrational abnegation of the call to meaning (surrealist montage, sites like Potatoland's Landfill).

So what else is on offer? (and how is this going to bring us to the topic of time?)

When I wrote *Digital Aesthetics*, I should perhaps have said in the preface that the writing was in effect an act of mourning for my mother, who died in my arms just before I began work on the manuscript. With her went a way of life, at least as far as I was concerned, a courteous, literate, considerate way of living. I wanted at one and the same time to find a way of holding her legacy in some form of permanence, and of drawing from it a negative analysis of the present. As a result I missed a crucial factor: that both the dominant and the vanguardist cultures of our times already present themselves as negative. It is as if everyone from Madison Avenue to Garbage had read Adorno, and that Baudrillard's jeremiads had been taken to heart in every Hollywood blockbuster. If in the early sixties, as Adorno penned his masterpiece, Joyce's exile, silence and cunning had become the core tools of the last avant-garde (Sartre, Beckett, Celan), by the 1990s they were the tools of every Tarantino, Guns and Roses, Tracey Emin. As a result, I am increasingly of the opinion that the role of contemporary criticism is to go beyond negativity, but without surrender to nostalgia; to go beyond Adorno, but to do so with cold, clear eyes.

The negation of the negation is positive only in the end result: it is still as meticulously stark a programme as Adorno set himself forty years ago. The task commences in the interrogation of time, and especially in the construction of the eternal present not only in consumer capital and the spatialisation of cyberculture, but in the triumphal nihilism of the best of North Atlantic thinkers from Baudrillard to Vattimo. It is essential to understand in the present the actually existing moment of the becoming of the future. Under the conditions of accelerated modernity, the present

is already past redemption. The battleground is now the actual emergence of the future. Corporate long-term planning is not the only force at stake in digital culture: we can learn from the cunning exiles of modernity that stealth and initiative can succeed in the guerrilla war at the frontier between the colonisation of the future and its construction. Artists, activists, audiences are now in a better position than ever to take up arms in the struggle for what does not yet exist. To do so we cannot afford nostalgia. We have to seize the instruments available, and make work that is better than *The Matrix*.

How better?

2. Precepts for a digital artwork

The primary task of the contemporary artwork is not to represent an object world to a subject supposed to have a monopoly on consciousness. That task belonged to an historical epoch when the emergent and then triumphant industrial bourgeoisie required an artistic and scientific culture to promote the philosophy of willed domination over an alienated nature and an objectified, and, to that extent, also alienated industrial class structure. Industrial capital created a culture of materials, including technology and the labour force, that required the form-giving principles of an industrial aesthetic, focused on the intensely local hub of manufacture: the factory. Industrial networks were a function of their nodes.

In the information economy, the nodes are functions of their networks. The global today is necessarily prior to the local, especially those localities which, like the border free trade zones of Tijuana studied by Coco Fusco, are sites of oppression. The reality of a woman forced into prostitution by the strategic requirements of the global economy cannot be photographed. No indexical account, anchored in the preeminence of the local in industrial culture, would be sufficient to understand the forces acting on her. A photograph would only stir the sentimentality defined a hundred years ago by the novelist Meredith: pleasure without responsibility. Responsibility today derives not from empathy, in any case a metropolitan prurience, but from understanding the networks that force her into this double economic and sexual oppression, the task of an iconic art, and the symbolic regimes that describe, define and give meaning both to her experience and to that of her oppressors, who include every user of the computers she builds when not supplementing her non-union subsistence wages with sex labour in the tourist economy. **The digital artwork must be networked**, and the formation of alternative networks is a critical function of them.

An artwork is material, and an artwork that fails to take account of its materiality fails to that extent. Digital materials are no exception. What

is vital in the indexical quality of media arts is not that they point away from themselves towards a recorded past to which is ascribed a reality they deny themselves. Rather, digital indexicality presents its own materiality as what it is—a concrete node constituted in the networks of social relationships, including the NAFTA sweatshops. As Margaret Morse (1998) argues of digital installation art, the contemporary artwork must construct its own locale, not presume it. The embodiment that concerns it is not the depicted body abstracted into a type that can be identified as the body, but a specific body constructed as local in the locality of the installation itself, a unique body which there confronts the imbrication of embodiment in the global networks that are brought to bear in the devices that surround it. In this way the digital index points not towards the recorded past of representation but to the materiality of the present as a concrete node of a networked society. **The digital artwork must be material**, and its materiality incorporates the bodies that come into contact with it and the local space and present time of their co-existence.

Which brings us to a crucial issue: **the digital artwork is processual.** When the index depicts its object, it both objectifies that object and presents itself as another object standing over against the depicted. But in the information economy, objectality is a secondary effect of primary flows, an argument made as forcefully by urbanists like Saskia Sassen (1991) and Manuel Castells (1996) as it is by Deleuze and Guattari (1972, 1980). In the attempt to image flow, the principle of indexicality itself demands abandoning the index as primary resource, since there is no object toward which it can stand in any relation. Instead, the intrinsically relational symbol takes priority. Information flows are relational first: content, expression, even form are secondary to this materiality. If the digital artwork is to be adequate to this relational world, it must itself prioritise relations. Communication is that relationship which precedes its terms—from the same standpoint, a line is no longer the shortest distance between two points; instead the terminal points are defined by the activity of the line. The active principle of communication defines senders and receivers, not vice versa. The material process of establishing relationships, which I tend to call mediation, is the core task of digital art today. It should also be emphasised here that the processes of mediation are not necessarily exclusively human. In our field, they also can—and perhaps must—engage a relation that determines the material of mediation, the technologies employed in it, as a term of the relation. We can no longer deploy machines as fixed capital without submitting ourselves to the anonymous and to that extent autonomous dead labour of the machine in pursuit of that anonymity and autonomy which post-subjectivity seeks in mirroring the dissolution of the object in information flows. **The digital**

artwork must mediate, and in submitting to the mediation of technology, offer itself to the task of vindicating the generations whose lost lives are congealed into the shape of our devices.

The acceleration of modernity in contemporary societies has reached a point at which the pseudo-instantaneous management of data flows has resulted in what at first glance appears as a total administration of the present. When cultural critics as alert as Paul Virilio describe communication as instantaneous, not only do they deny the materiality of mediation; they fall into an ideological trap laid precisely by the administration. Discourse that surrenders to the ideology of light-speed communication presents as normative the proposition that the present is always already documented—represented, distributed, consumed and past. The technological fact is that transmission is not only delayed by the institutional processing which administration demands, but by the physical limits to the speed of electromagnetic wave forms. Very, very fast is still not instantaneous, and the present should never be mistaken for its occupation by images of even the most recent past—the one twenty-fifth of a second required, for example, to build up an electron scan on a video monitor. As process, not object, **the digital artwork must inhabit the present as a moment of becoming,** a moment whose reception is therefore always deferred into a future which has not yet become.

The immediate result of this habitation of the present is that **the digital artwork is by nature ephemeral.** The remarkable archiving of web and net art undertaken by Steve Dietz at the Walker Art Gallery is a case in point. Dietz is clear as curator, and the design of the frame that surrounds the documented sites ensures that any visitor should be too, that what is archived here is not art but documentation. The important task of archiving does not deny ephemerality: on the contrary, it affirms the gap between archive and art, and asserts if anything the necessity of the distinction. Like the special effects blockbuster, the digital artwork is condemned to be cutting-edge, but unlike the blockbuster it doesn't suffer from the patina of the out-of-date that so rapidly scratches the emulsion of films that have passed their sell-by. Instead, that passage into the archival ensures both that the code enabling the work becomes a resource for other artists ("The writer who does not teach other writers teaches no-one"—Benjamin 1973) at the same time that it ceases to function as an occupant of the present. If the web, as auto-surveillant traffic in documents, is a self-mapping device, its cartography is itself effervescent—a simulation which is no sooner recorded than it becomes defunct. In the same way, the instruction set that generates a digital artwork is over as soon as it has completed its run. This is why the effects movie is never an artwork, and why Photoshop images are so aesthetically moribund: what

has been aesthetic in them is the process of making—once that process is terminated, the art is over, and what is presented to the public is only its discarded archival image. To this extent, whatever is mimetic in the digital is a mimesis of a task already accomplished, a body that is already past, and as such is excluded from the aesthetics of digital artworks, in which the process is as yet unfinished. The mimetic persists, but as a raw material for further processes. In this sense, **the digital artwork is obliged to be incomplete**, its ephemerality dependent on the deferral of all goals to a time which cannot be achieved in the artwork, but toward which it aspires, and in whose direction it gestures.

Moreover, the ephemerality of the digital is an integral element of its formal properties. As Virilio would say, the invention of the computer is also of necessity the invention of the computer crash. Many of the most significant works—Jodi's are the most obvious—are dependent on the disruption of the normative efficiency which has been inscribed into computer design as an ideology if not a reality. In a recent piece, *Lapses and Erasures*, Sawad Brooks undertakes a related task, writing in a text note to the piece:

> In analog media, when something is erased, it is often possible to sense the mark left by erasure. Thus Rauschenberg was able to present his "Erased de Kooning" drawing as his own (ironically). Erasure leaves its own traces, it is writing or drawing. It is a wiping clean which puts forth an order with the possibility of decipherment... I make drawing interfaces to draw upon the erasure of erasure in the realm of the digital (Brooks 2000, np).

If drawing is a practice in which artists subordinate themselves to the activity of the line as to a machine designed to generate a non-volitional autonomy from selfhood, as it is in the work of David Connearn, subordination to the technologies of computer memory offer a further tool: the double negation of the erasure which the computer also enables, its amnemotechnics, becomes a resource for the construction of the future as the erased erasure of the past. The proof is that it is almost impossible to erase a file accidentally. Traces remain from which skilled operators can retrieve even the most shredded data as, once again, the Microsoft trial researchers proved in their fossicking among the dead-letter offices of internal e-mails. Erasure is a making of traces in the form of what has been erased, but where in analogue media what is revealed is the surface which the erased drawing itself erased, in the digital there is no preexisting surface, only the space created by the act of recording, so that what erasure produces is the evidence of a surface that never existed prior to the erasure. At the same time, however, the erasure is never complete, but

approaches asymptotically to the mystical point of zero existence. Here, as in the attempt to make a total artwork, zero resembles infinity more than it does unity, and can only be approached by infinitesimal subdivisions of the existing. Where analogue media had the power to work in the binary opposition of presence and absence, the digital are endowed or cursed with an inability to deal in absolutes. To this extent then, **the digital artwork must be imperfect**, since it can never achieve either absolute existence nor absolute absence. The greatest benefit of this discovery is that the imperative towards harmony need not be heeded, and the digital is thus freed of the necessity of harmonising formally a world which is, in all its relations, so profoundly inharmonious. The digital is profoundly incapable of that perfected harmony in which the ideological tasks of societies are achieved under the guise of the autonomous artwork.

The processual nature of digital art makes it incomplete and imperfect, in the sense that it cannot achieve the absolute completion and perfection of pure presence. In fact that metaphysics of presence, abandoned first by mathematics in the mid nineteenth century, now haunts, as absence, only the transitory sublime of annihilation as special effect. Nonetheless, though practice has all but abandoned it, the sublime still haunts contemporary aesthetics from Adorno to Danto as both the Kantian marvelling at domination and its negation—the abjection of the subject. This unappetising metaphysical binary suits the times, as visible in the new cult of Bataille as it is in the neo-Kantianism of Lyotard's late writings. The result is a performance, typical of idealist metaphysics, that simulates the aesthetic dialectic in the static play of a rational/irrational binary that merely enacts modernity's logic of efficiency and degradation. In aesthetic terms, here rigor mortis masquerades as danse macabre. It fails not so much because of this stasis, however, nor because of its misreading of the present as 'what is the case,' but because it takes reason and unreason as essential terms in an epoch in which essences no longer pertain. **What distinguishes the digital artwork is its elegance**, in the sense intended by David Gelernter: its clarity, economy of means, operational grace.

This is not to say that digital artworks are passionless and formalist. On the contrary: the hall of binary mirrors that traps essentialist art produces that affectless manipulation of tear ducts, erections and fight-or-flight adrenal secretions in sedentary and stultified consumers. It is rather the case that the characteristic emotions of digital artworks—the movement through disorientation to new orientation, for example, in a dislocated place, the gasp at beauty realised on the wing, the complex humour of, for example, the First International Competition of Form Art—are more subtly and actively conformed to the changed character of accelerated modernity. They are, in a word, necessary. **The digital artwork must**

be necessary: its elegance is a function of the need for the work. That need can no longer be formed as expression, although it remains true that contemporary capital is ever more dependent on the hyperindividuated narcissism of the competitive corporate playpen, and an art that pretends to bypass that lens of subjectivity thereby fails to respond to the necessity of individuation as a passage through which a work moves. Expression remains, but now as the anonymous product of autonomous networks.

Aesthetic necessity arises at once from the fact of flow, its mediations and the temporalities they engender. The tendency of capital is toward monopoly; that of its flows toward domination. Control over financial flows in particular is the goal of transnational capital. But this goal is realisable only in the eradication of difference, that difference which produces flow from one place to another. That difference, since it cannot be eradicated systemically without destroying the flows themselves, is now displaced into the managed future of corporate planning, most directly in the simulation of futures markets. But when the future is evoked as the basis of global stability, capital faces a crisis of unpredictability. As ideology, future modelling depends on ever more refined data sets and ever more rigorous algorithms for their projection. But it is precisely in computer modelling that the problem of turbulence is posed most categorically. Not only definitionally but technically, the future resists modelling.

By dint of its pseudo-theological position in the regime of global data flows and their perpetually deferred promise of perpetually deferred payment, the future is held to vindicate the claims of the present to wholeness and completion. But the deferral on which that wholeness rests denies that wholeness to it. As the active relationality of networks, mediation, by definition in process and incomplete, is thus forced to pretend to a completion to which it cannot attain. It materiality is deferred into the not-yet as the price of its present functioning (a state of affairs that generates the illusion of static binary oppositions). This contradiction in turn generates the digital aesthetic as its necessary outcome: the materiality is restored to the present, while the function is shifted into the unforeseeable future. Hegel's concept of art as the consciousness of need is the inspiration for this insight, but as the digital aesthetic arises from the relationality of global networks inclusive of human and machine components, that consciousness is now not individual or even merely social, but cyborg. **The digital artwork is cyborg**: it responds to the institutional, economic and discursive formation of corporations as actually existing cyborgs by building an alternative consciousness in which the mechanical is no longer the object of domination but integral partner in the production of culture. Neither the consciousness under construction nor the need to which art responds are then entirely or purely human.

In order for the future to be held up as the settling of accounts on the promissory notes of the economic, political and ecological present, it is essential for the administration of global data flows that the future be isolated from the present, so that the promised completion on the deals which are the dominant mode of communication today need never arise. Here a specifically temporal contradiction arises: the difference between future and present is both affirmed and eradicated. The future must be both continuous with the present (all debts depend on the concept that they can eventually be paid) and entirely divorced from it (since debt is the motor of financial flows, they must never be allowed to be paid). It is this faultline of difference between present and future that requires the digital as its necessary outcome: its elegance derives in part from its determination as the inhabitance of the present as difference. The digital artwork has no choice but to affirm the immanence of the future at the point of its emergence.

The necessity of the digital artwork is then not organic in the sense propounded by Romantic aesthetic philosophy, since it necessarily abjures wholeness. Instead, the digital works at the level of mediation as the unhappy conscience of dominant communication, a cyborg will to grace. The digital is then communicative rather than representational. This places it in opposition to the evolution of e-cash as the supposedly immaterial universal signifier of all exchange values, promoting the substitutability of everything for anything. Asserting aesthetic difference restores neither the individuality of objects nor the objectality of individuals, the reciprocal functioning of index and identity resulting from industrial modes of communication. Instead it assets the primacy of mediation, of the material of relations. In this perspective, the digital artwork can be assessed according to the breadth, depth and complexity of the networks it engages or engenders. Unlike Deleuzean difference, however, aesthetic difference is not an absolute horizon external to all humanity and all communication, but a difference intrinsic to communication which, viewed outside the confining determinations of the actually existing historical conditions, is defined by its tendency towards inclusiveness and its capacity for translation, misunderstanding and so for interpretation and systemic innovation. Communication's own need, bred in the interface of combined human and technological networks, is that of a newly cyborg communicative species for inclusion and autonomy. The digital is the necessary next phase in this historical process, a process which I believe is synonymous with history: hastening the globalisation of the mediating infrastructure while driving forward those internal contradictions that make the global and deferred information economy unthinkably neither present nor future. Like Ed Dorn's railway wagon, everything is behind

and nothing in front. Mediation is the activity through which the hybrid communicative species become, and specifically how they become other than they now are.

When, as D.N. Rodowick explains, Deleuze argues that "what philosophy resists" is "the globalization and banalization of information as a power that affirms the dominance of late capitalism" (Rodowick 1997, 192), we perceive both the binarism that hog-ties Deleuze's philosophy for lack of a dialectic, and the weakness of a politics that relies on the unequal struggle of philosophy against world capitalism. You can be guaranteed that philosophy will only ever resist, and that it will never triumph. Against this brave, pious but ineffectual quietism, and against what Eco (Eco 1986, 93) refers to as the "negative theology" of philosophical nihilism from Heidegger to Baudrillard, **the digital artwork must be communicative**, for only communication is vast enough and necessary enough to endure and to overcome the vicissitudes through which it is being tortured in the age in which communication is information, information is power, and money and data are electronically indistinguishable.

The implication of the theses of ephemerality and communication is that the digital has an altered relation with consumption. Much electronic art owed and owes its genesis to the conceptual art of the 1970s and to the critique of the commodity that gave rise to media as varied as LeWitt's instruction sets, the Situationist dérive and the community workshop and newsreel movements. But now that the commodity itself is in a state of implosion, a vacuity both raged against and celebrated in the rage of mainstream culture from Tarantino to rap, the focus of the digital is shifting from the provision of objects whose contemplation exposes the emptiness of the commodity towards building encounters for participation. This has little to do with what is usually referred to by the term interaction. It concerns rather factors such as the level of skill required of both producers and participants in digital artworks. The digital artwork demands that audiences acquire a determinate set of skills and understandings to participate fully in the work. In Toshio Iwai's *Resonance of Four*, for example, there is a default state which is pretty but dull, while random gestures with the track ball will produce interactive 'rewards,' coloured lights and sounds. But the experience of the work as artwork demands both understanding the principle of the device as a composing machine, and working in consort with three other users to create music. **Artisanship is integral to the digital**: so the best artists are also either engineers or groups including technologists and programmers, and so our students demand of us programming skills more than bundled packages. This goes against the current of the televisualisation of the web, where the end-user defined html language is being submerged in a wave of server-

defined Javascript while, as Tim Berners-Lee (1999) argues, the full interactive power of alternatives like the Linux-based Amaya browser remain unexplored and marginalised. The old balance cannot be restored: instead, it must be remade, as it is in interventions like The Webstalker that not only offer control but demand active participation. Something similar is true of RTMark's web works, which imitate the control structures of corporate web-design but demand action if they are to be experienced not as parody but as art.

Digital media are grounded in work in a second sense: to return to an earlier theme, electronic media are grounded not in leisure, as the televisualisation of the web insists, but in the workplace. In place of the elite contemplation of the refined consumer, the digital artwork demands the intellectual and emotional graft needed to change the work into something else, very clearly in the collective montage projects now such an integral part of web art, but also in projects like Sera Furneaux's *Kissing Booth*, where users not only orchestrate virtual kisses but record their own into the booth's database. In this instance, the work does not exist until the user provides the input. This culture of the database is akin to activist post-artworks like the SOS Racisme mail-bombing of Le Pen's National Front, or the Zapatista Interneta's of the Frankfurt stock exchange. Conceptualism left a legacy of anti-commodity art: its dialectical outcome is a pro-work work. **The digital artwork is work**, a labour shared in the human-computer interface and, like any work, founded in a social process that demands cooperation among workers, and between workers and those anonymous forebears whose skills are enshrined and concretised in the dead labour of our machines.

As work, the digital requires the shared labour, specifically, of artist and audience, to the extent that the distinction begins to blur. To what extent are Audio-ROM the authors of a sound piece I might make with their programmes and interfaces but using my own samples and, since the coding is open, my own coding too? On the one hand, this scares those brought up in the expressive ideology of the art schools, and on the other the pious elitism of humanist scholars who, thirty years ago, leapt at the novel focus of the Birmingham Centre for Contemporary Cultural Studies to abandon attempts to understand labour. Yet work is today a curiously liberating principle. To the extent that artists relinquish control over the artwork and, to that extent, over the audience, the audience must assume the same degree of responsibility for the work that the artist has abandoned in offering it to them. Without that assumption of responsibility, the artwork resorts to the default state of older art: passivity and what we must now understand as the anaesthetic. **The digital artwork demands responsibility**: there is no art where the audience does not take up this

gauntlet and where instead it reserves for itself the sentimental position, enjoyment without responsibility. This is the burden of Eduardo Kac's *Teleporting an Unknown State*, in which the survival of a small plant depended on CUSeeMe clients providing it with remote sunlight, or Ken Goldberg's *Telegarden* which depended on telerobotic users to tend the garden. Likewise, since even in death the labour of past centuries is still exploited, the digital artwork's destiny is to redeem and liberate the concretised labour embodied in our communicative machines. That is how the past becomes future, beyond the old lie of posterity. After all, we are the future that our ancestors looked to to judge and justify them, and we are not worthy—unless we seize the present as the becoming of their future. This is the responsibility which we take up, the only people among all the humans who have ever lived, who are alive now.

Under the existing circumstances difference is not a given, a foundation (however complex) or a horizon but a job of work: making a difference. Communication, under the historical conditions of contemporary capital, can no longer be presumed as an a-historical given. In a time in which it is almost entirely identifiable with the circulations of global finance, such that our consumption of commodities even is merely a necessary moment in the circuits of capital, communication must be fabricated, since it is no longer natural. On this fabrication depends the making of a culture that is no longer crowned by the negation of its own negativity, as remains the case with accelerated modernity. Instead, the digital must turn towards the positive construction of the present as difference, a creation that only becomes possible in the era of a planetary communications infrastructure. As construction, the digital must forswear the sublime, for the sublime confronts us not as the incomprehensible but as the incommunicable, an absolute horizon beyond history. To construct is to act historically, to embrace the interests, human and technological, that have been left so egregiously unsatisfied by the culture of the commodity, itself increasingly embraced in the anaesthetic of its own sublime absence from itself. Change is the quality of history and of beauty—what is transient, what comes into being in the moment as the emergence of futurity. **The digital artwork must be beautiful.**

These explorations can be summarised in terms of a series of principles I have tried to voice here:

The digital artwork must be networked
The digital artwork must be material
The digital artwork is processual
The digital artwork must mediate
The digital artwork must inhabit the present as a moment of becoming

The digital artwork is obliged to be incomplete
The digital artwork is by nature ephemeral
The digital artwork must be imperfect
What distinguishes the digital artwork is its elegance
The digital artwork must be necesary
The digital artwork is cyborg
The digital artwork must be communicative
Artisanship is integral to the digital
The digital artwork is work
The digital artwork demands responsibility
The digital artwork must be beautiful

The digital is a malleable aesthetics (Deck 1999), based on the principle that anything that can be made can be remade. Where the artworks of the industrial era hover between existence and non-existence, presence and absence, the digital seizes on the not-yet for its own domain at the moment of its emergence. Its time is the time of becoming. The cost is great: the loss of permanence, of authority, of wholeness. As work, the artwork that ceases to transform the emergence of the future ceases to be art and becomes archive: the vibration of binary industrial-era art no longer animates the démodé. The innocence of play is denied us in a time when play has become a key strategy of the corporate management of creativity in hock to the production of new consumer goods. We may no longer inhabit the present for its own sake, as the impressionists and the Lumière brothers could, but only for the sake of a future for which we are enjoined to take responsibility. The great negation which guided the avant-gardes of the twentieth century no longer holds in the twenty-first, and without that guide, we risk the sentimental positivity of Ewoks and tamagotchis. Most of all, we suffer the immense burden of beauty, the terrible onus of bringing into existence. But on the positive side, we have the whole of history, its staggering defeats and millennia of immiseration, to propel us into the new.

Bibliography

Adorno, Theodor W. 1997. *Aesthetic Theory*. Ed Gretel Adorno and Rolf Tiedemann, Trans. Robert Hullot-Kentor, London: Athlone Press.

Benjamin, Walter. 1969. *Illuminations*. Ed Hannah Arendt, Trans. Harry Zohn, New York: Schocken.

Benjamin, Walter. 1973. "The Author as Producer." *Understanding Brecht*. Trans. Anna Bostock. London: New Left Books, pp. 85-103.

Berners-Lee, Tim, with Mark Fischetti. 1999. *Weaving the Web*. London: Orion.

Birkerts, Sven. 1994. *The Gutenberg Elegies: The Fate of Reading in an Electronic Age*. London: Faber.

Brooks, Sawad. 2000. [text] at http://www.thing.net/~sawad/erase/trait/text.html

Castells, Manuel. 1996. *The Information Age: Economy, Society and Culture volume One, The Rise of the Network Society.* Oxford: Blackwell.

Critical Art Ensemble. 1996. *Electronic Civil Disobedience and Other Unpopular Ideas.* New York: Autonomedia.

Deck, Andy. 1999. "Curatorial Alogorithms and Malleable Aeshetics." *Millennium Film Journal* n.34, Fall, pp. 82-91.

Deleuze, Gilles and Félix Guattari. 1972. *L'Anti-Oedipe (Capitalisme et Schizophrénie I).* Paris: Editions de Minuit.

Deleuze, Gilles and Félix Guattari. 1980. *Mille plateaux (Capitalisme et Schizophrénie II).* Paris: Editions de Minuit.

Druckrey, Timothy. 1999. "Netopos... Notopos: The Fate of Reason in the Global Network: Teleology, Telegraphy, Telephony, Television, Telesthetics." Timothy Druckrey with Ars Electronica eds. 1999. *Ars Electronica: Facing the Future.* Cambridge MA: MIT Press, pp. 305-311.

Eco, Umberto. 1986. *Faith in Fakes: Travels in Hyperreality.* Trans. William Weaver. London: Minerva.

Eisenstein, S.M. 1988. "The Problem of the Materialist Approach to Form." *Selected Works, volume 1, Writings, 1922-1934.* Ed. and Trans. Richard Taylor. London: BFI, pp. 59-64

Eisenstein, Sergei M. 1993. "Imitation as Mastery." Ian Christie and Richard Taylor eds. 1993. *Eisenstein Rediscovered,* London: Routledge, pp. 66-71.

Gelernter, David. 1998. *The Aesthetics of Computing.* London: Phoenix.

Morse, Margaret. 1998. *Virtualities: Television, Media Art, And Cyberculture.* Bloomington: Indiana University Press.

Peirce, Charles Sanders. 1991a. "One, Two, Three: Fundamental Categories of Thought and Nature." *Peirce on Signs: Writings on Semiotic by Charles Sanders Peirce.* Ed. James Hooper. Chapel Hill: University of North Carolina Press, pp. 180-185.

Peirce, Charles Sanders. 1991b. "A Guess at the Riddle." *Peirce on Signs: Writings on Semiotic by Charles Sanders Peirce.* Ed. James Hooper. Chapel Hill: University of North Carolina Press, pp. 186-202.

Poster, Mark. 1990. *The Mode of Information: Poststructuralism and Social Context.* Cambridge: Polity.

Postman, Neil. 1992. *Technopoly: The Surrender of Culture to Technology.* New York: Vintage.

Rodowick, D.N. 1997. *Gilles Deleuze's Time Machine.* Durham NC: Duke University Press.

Sale, Kirkpatrick. 1996. *Rebels Against the Future: Lessons for the Computer Age.* London: Quartet.

Sassen, Saskia. 1991. *The Global City: New York, London, Tokyo.* Princeton NJ: Princeton University Press.

Willemen, Paul. 2000. "Of Mice and Men: Reflections on Digital Imagery." *TwoNineTwo,* n.1, pp. 5-20.

Yampolsky, Mikhail. 1993. "The Essential Bone Structure: Mimesis in Eisenstein." Christie, Ian and Richard Taylor eds. *Eisenstein Rediscovered.* London: Routledge, pp. 177-188.

Sites cited and other relevant links

Anti-Rom http://www.antirom.com/antirom01/index.html

Digital Landfill http://www.potatoland.org/landfill/

Digital Souls http://www.digitalsouls.com/

Form Art Competetion Winners http://remote.aec.at/form/winners.html?

ICC Tokyo http://www.ntticc.or.jp/menu_e.html

Jodi http://www.jodi.org/

Eduardo Kac http://www.ekac.org/

Lapses and Erasures (Sawad Brooks) http://www.thing.net/~sawad/erase/ RTmark http://www.rtmark.com/

Telegarden http://www.usc.edu/dept/garden/

Teleporting an Unknown State http://www.ekac.org/teleporting.html

Walker Art Gallery New Media Initiatives http://www.walkerart.org/nmi/index.html

The Webstalker http://bak.spc.org/iod/