Cybertime: Ontologies of Digital Perception

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ABSTRACT
Although much work in digital cultures alights on the concept of space as a medium for orientation in narrative productions, the structuring of time is now an urgent object of study for cybercritics, as indeed it has been for philosophers and social scientists (Virilio, Lash, Osborne inter alia) in recent years. The problems confronted include those of the divorce between space and time as a prioris of Kantian and subsequent philosophies, the nature of time as datum, and the social theorisation of time as construct. The paper will argue that temporality has become a raw material for digital production, as much as luminance or narrativity, and that the malleability of time has produced both new closures and new openings for creative work in new media.

Cyberspace: at least we know what we're talking about. Cyberspace is a territory, Gibson's 'consensual hallucination', entered through portals and gateways, viewed through Explorers and Navigators, a dimension with its own geography of datastreams, homes, firewalls; where cybernomads roam the electronic frontier, whose orientations are back, forward and deeper. It is also, in the language of philosophical sociologies like those of Kittler and Virilio, as in the technoboosterism of cybergurus, instantaneous or about to become so. I don't have to tell this audience that the network universe only seems infinite from the inside; seen from Mozambique right now, I imagine it has shrunk smaller than the mosquito's larva that carries river blindness. But not all digital media are connected to the network, and not all outcomes are effectively spatial. This paper is a what-if scenario: what if the cybernetic media are not instantaneous? What if instantaneity and immediacy are ideologically fraught denials of time? What if time...
Time has been getting its fair share of attention outside the cyberculture zone in recent years. For film studies Deleuze's cinema books, their commentators and critics (Jonathan Beller 1995, 1998; David Rodowick 1997), Jonathan Crary's recent book on attention and reverie in late 19th and early 20th century France (Crary 1999), Lorenzo Simpson's work on time and technology (Simpson 1995), Virilio's dark forebodings about the end of human scales of time perception (for example Virilio 1998): all of these and others are rethinking the nature of time in cinema and cognate areas. I would like to add my two cents worth with a suggestion first that time in the digital era is different again from the times of the pioneer cinema or of classical film addressed by Crary and Deleuze (1986, 1989) -- so much so that it is worth going back once more to rewrite the history of cinematic time from the standpoint of the moving present, not in the interests of proving a better system, but to add to the palimpsest of film history another layer whose codes are pixels, cuts and vectors rather than the photographic codes that Metz taught us to foreground before the digital invaded. Far from jettisoning the 20th century, I want to learn from it, but to do so in the spirit of an accelerated modernity which does not allow scholars, activists and creators the luxury of fossilising conceptual frameworks. Time is changing as the times change, and the nature of that change has something to do both with our machines. Unless you believe that history ended with the non-appearance of the Y2K bug, the fatal crash that wasn't and didn't, talk about cybertime is necessarily historical talk.

That's one cent. The second concerns the claim that there might be something ontological about the nature of time, or about an interest in it in the first years of the 21st century. I put into play here a vague schematic I pencilled out a few months ago, according to which the 1960s was the last era of ontological media speculation. MacLuhan as maître-à-penser for example took the media as ontological entities, and applied an informational paradigm that spread from its 1940s scientific base into the art and practice of makers and theorists as an enquiry into the reality of its objects. In the wake of the May Events, the turbulent specialisms of 1950s structuralism spilled into the general culture as an epistemological question concerning what and more specifically how we know. In the 1980s, where things begin to get fuzzy, a phenomenological turn shifted us towards an enquiry, tempered in the fires of cognitive anti-psychologism, into the cinematic body and the nature of experience. My sense, wilful perhaps, is that by the mid 1990s there was a return to the ontological questions raised in the 60s, but this time instead of taking communication as object, communication is taken as premise, and the core concern is with the processes of mediation through which we construct and inhabit our realities.

That reality is constructed doesn't alter its reality. Symbolisation structures the real -- by exclusion. So the real is left out, a remainder, unspoken and unspeakable. There is a politics to this of course, as to any exclusion, and it is all the more urgent for occurring in a newly globalised network of symbolisation that now entirely embraces the world's financial transactions as symbols in a universal currency from which the poor are expelled into the hell of the real. But the real is not synonymous with reality. There is nothing immaterial about symbolic effects of global finance markets and their excluded real. The ontological turn of the last few years is an enquiry into how we arrived at our communicative world, what it looks like now we are here, what it can become. Temporality is only one aspect of the reality that we confront, but it is a telling one, I think, and can maybe lead us towards some interesting questions.

The preamble now preambulated, I can turn to some novel modes of time associated with the new media. First and foremost, -- in fact this may be the only thing I have to say which is worth remembering -- there is no such thing as instantaneous communication, at least not in my species. Let me clarify. The question for the digital media is no longer about how media represent or misrepresent the world. That is a question for the photo-mechanical era, and one that leads all too easily towards the dead-end nihilism of Baudrillard's recent writings. The purpose of media is not to picture or describe an external universe but to mediate. Mediation is the materiality of communication. It describes the necessary interposition of some physical process in the commerce that binds us as a species. There is no immediate communication except telepathy: only in sharing another's mind could we communicate without mediation. The immediacy that Negroponte (1995) dreams and Virilio fears is a will o' the wisp. All mediation takes time.

There is a measurable duration to physiological processes in the nervous system and the brain that intervene between perception and cognition. There are physical constants that govern the maximum speed
of the promulgation of electromagnetic waves. More importantly perhaps there are limits to the attentiveness of the contemplating mind that place constraints on the speed of thought. In communication, it is not enough to receive (that word belongs to the 1960s paradigm of communication analysis, not to the ecological imaginary of emergence that now gives us our model for neural processing as indeed for global communication). We have to understand, which implies interpretation, which in turn implies weighing alternate interpretations. Often enough it implies misinterpretation in the processes of translation which are to the new ontological paradigm what transmission was to the old. Misinterpretation leads to negotiation. All of this takes time. The idea that an image, let's say, can be transmitted instantaneously, that an eye can take it in instantaneously; that in the same instant a perfectly receptive mind can receive the image as pattern, recognise it as an object and provide it with a name: this is simply too much. Mediation can be darned quick but it can never be instantaneous. Most of the time it is pretty slow, even on a person to person basis. If we take into account the industrial timescales of production and the activities of interpretation and enjoyment that entertain fan cultures, to take a simple and familiar example, we are not discussing a Husserlian Augenblick: we are talking about processes that accumulate in time, acquire their specific characters as temporal events in and of time, whose reality, in short, is temporal.

There's a philosophical question here, as to whether this kind of time is intelligible. Actually there is a question as to whether time itself is intelligible. I was interested to read in the 26 Feb 2000 issue of New Scientist that a theory of the emergence of the universe from random noise proposed by two Australian researchers is the first to offer a physical account of the present (the idea is that since the random generation is ongoing, the present is the moment at which we don't know what happens next). It seems the humanities are not alone in this dilemma. The physicists of course work on the principle that if time exists as a property of the physical universe, then it remains to science to render it intelligible. My proposal is slightly different: it is that time exists as a raw material, but that in different epochs we have learnt to manipulate it in different ways. Just as we have learnt to make art from the irreducible drives of sex and hunger, arts of love and cuisine, of desire and satisfaction, so that today neither lust nor hunger can be experienced as they might have been by our distant ancestors or even our most recent forebears, so time is no longer the raw aggression of mortality that Heidegger tried to retrieve from the ancients, but a complex and to some extent biddable quality of life that we have altered and continue to remake. In the same way that fire and clothing altered eating and fucking, so, as the form of our mediations alters, the temporalities we have standing by for us to use alter too.

What then has the digital era brought us? One characteristic experience is render time -- seen from the other end of the production process we can call the same phenomenon download time. You build a wireframe, a process which the verb already describes in terms inherited from the work of traditional modelling with physical materials. You select surfaces and surface effects, try a few options, select a view and render it as a bitmap. Even to load this onscreen can be a time-consuming experience. Happy with the result, you dump the frame, or a sequence based on it, to digital video. You sit back. You make a cup of coffee. You saunter next door and see what they're up to. You check the render progress. You decide maybe this is a good time to make a few calls, perhaps catch a bite to eat. The hard drive is still whirring when you get back.

Some days later, after the sequence has been uploaded, your chums log on to see what you've produced. Even an ethernet connection isn't going to stream your video in real time. The remote machine begins a download. A dialogue box appears telling them what progress is being made, how speedily it is doing its task, how much time remains. On my machine, the Time Remaining line is the most entertaining, jumping from three minutes to less than a minute to two minutes and then up to four . . . . If we are to believe the halcyon cry of push media -- the televisualisation of the web -- download time will become a thing of the past. Shame, I say. This is the last redoubt of labour time, the time that speaks of the time of making. The delay is itself an integral part of web traffic and file transfer protocol and has been since the early days of mainframe time-sharing. The staggering speeds of even desktop machines and the ubiquitous impression that Moore's Law is to all intents and purposes a law of physics rather than of economics both lead to the idea that there is a zero of instantaneity toward which we advance by approximation. Of course, the calculus should have shown us that this is a very poor method for arriving at immediacy: Zeno's race between Hercules and the tortoise already tells us that the number of points between here and there is infinite. Sometimes, waiting for the download, you feel as if you have entered that bizarre temporal universe that Zeno constructed in the attempt to prove that the world was static and complete. It was a
strange twist of history that led those same paradoxes towards their uses in the description of a universe without discretion. It lasts while the download lasts, unless we become too impatient. It is always worth savouring time: there is a limited supply in any life. Rendering and downloading are aspects of the time of digital production which are there for contemplation. In the rush to finish, we risk losing the duration of process. If finishing is all we want, then the thought of the journey is lost to us, the movement of data from here to there. That journeying belongs to a machinic time to which the waiting room of download time gives us a privileged access (I recommend tuning a shortwave radio to the Mhz frequency of your processor so you can hear its actions too). That time is, from our perspective, Zeno’s paradoxical time of stasis; but it is also the time of the machines as aggregations of dead labour, the time taken up by the process of bringing all that congealed history back into life. Not even the flickering of the pioneer cinema that Burch (1990) celebrates is as convincing a display of the obduracy of work in the apparently dematerialised world of information. Slowness and its artefacts, like the stagger and jump of downloaded QuickTime movies and RealPlayer files, are not flaws but materials.

A second new time proper to the digital is the crash. Again, the ideal description of computer media never includes this most universal of experiences. Computers crash. Certainly, like everyone else, I've driven machines to freezes, bombs and software loops and watched the screen die, taking with it hours of unbacked-up work, and I've cursed the machine and myself yeah from generation unto generation. But as time goes by, you learn to make provision for the inevitable, mainly by proliferating copies. But in the end we all know that the magnetic media are not reliable storage, even in the short term. A server is safer than a floppy, but as anyone knows who's lived through a major server crash or worse, a transfer between servers, even they are no guarantee. The crash is not a contingent drama that has nothing to do with the machinery: it is inherent in digital media. So what is it, in temporal terms?

The crash itself is an event, with a duration, and a subject position (we can refer to it as the Oh-no position). For the more perverse among us, there's even a certain delight to be extracted from the event itself. More significant is the aftermath of the crash, its longer duration as the beginning of a process of recuperation and retrieval, but most of all of coping with loss. Where a crash deletes files, usually the ones you're working on, you find yourself trying to reconstruct it in a process which involves two memories: yours and the machines. One of the things you learn swiftly is that machines are far better at forgetting than their users. This is amnesic time: the time of forgetting, which has become an integral part of computer culture and one of its most important additions to the aesthetics of contemporary media.

The purpose of most media forms since the invention of the alphabet has been preservation. People have sought to preserve their traditions, philosophies, mathematics, science, stories and likenesses in mediated forms for millennia: carved their names on trees, built monuments. As monumentality gives way to proliferation (from Stonehenge to the printed ephemera), the same tenet holds. What emerges into the centrestage of culture in the digital, especially in the kind of retrospective history that I am proposing that we need, is the countercurrent of ephemera: the self-consciously timely products of the hour or the day that have no purpose to continue beyond their brief moment. With the computer crash, ephemeralism enters the domain of the monumental. It provides us with a compulsory opportunity to erase and start again. It renders every document ephemeral. Where erasure is a constant option, accidental erasure, like unconscious forgetting, is a constant generator of random cultural mutation. The fixed form of textuality is lost in the possibility of erasing -- an erasure which lies at the heart of the possibilities for interactivity that network communications bring with them, since to rewrite someone else's files, you have to erase their input.

Moreover, the constant presence of the possibility of absence alters the nature of the present in digital time. The omnipresent awareness that what is onscreen at any moment may not be accessible in the next makes the present indefinitely valuable and indefinitely malleable. Fixity is not a teleology of digital media: erasure is. Every computer file balances over its own deletion with infinite fragility but also infinite possibilities for its remaking. That balance is not, however, a matter of existence versus the void, but of the equilibrium promised by the first law of thermodynamics, the zero sum of all forces in a universe in which energy can neither be created nor destroyed. What is at stake is not nothing but a zero composed of all interactions across the history of a system, a system like a computer file. All its permutations are at once summed and absented in the equilibrium it attains in the face of erasure. Digital presence is then premised on a non-presence of perpetual permutation. Forgetting becomes an art, an amnemotechnic that places every
existent in a fraught relation with all its other possible forms.

Implicated in this immanence of forgetting and permutation is a further distinction which we can draw on to clarify the temporalities of the crash. On the one hand, there is memorised time: the durational quality of the memory we try to restore (or try to erase) while on the other stands the memorial time in which that memory is brought to mind. That distinction has held good for several centuries, perhaps more. But under conditions of digital temporalities, there is a new factor, a continuity brought about by the difficulty of absolute forgetting in machine memory. The condition arises from the foregrounding of mediation in digital media. In representational media, forgetting is always a forgetting who, or what or where. In digital mediation, the process is far purer, in the sense that there is only a mediation to be forgotten, but also less definite since the fact of mediation remains when the mediated has been mislaid. Viruses, fragmentation, crashes and erasures as well as magnetic damage to portable media all construct the digital as a realm of contingency, and differentiate its present from the present of the photogram.

In Vivian Sobchack's account, the still photograph exists for us as never engaged in the activity of becoming . . . it never presents itself as the coming into being of being . . . . when we experience the 'timelessness' that a photograph confers on its subject matter, we are experiencing the photograph's compelling emptiness; it exists as the possibility of temporality but is a vacancy within it (Sobchack 1992: 59)

Film, by contrast, she argues, does not transcend our lived-experience of temporality but rather it seems to partake of it, to share it. Unlike the still photograph, the film exists for us as always in the act of becoming (Sobchack 1992: 60)

What digital mediation brings to this 'fullness' is the instability of a primary differentiation. Like Deleuze's concept of the interval, Sobchack's fullness recognises the absence of absence, but not the changing status of zero in all this. In the metaphysical mode of cinematic thought, zero is still equated with the void. But in digital media, zero is rather precisely 0.7 volts, while one is usually about 5 volts. Crudely, there is no empty place, but a reference signal, itself a waveform. We are then not dealing with presence and absence but with modes of presence. In cinema we can take two moments as synchronous: the run time of the projector and the real time of the audience. But when we are dealing with remote machines, as web delivery of QuickTime trailers, or satellite delivery of feature films, the equivalence is no longer supported. The orders of mechanical and human time apparently united in a stable and integral whole in the cinema are disunited and dispersed in the digital. We can see some aspects of this already in the different temporalities inhabited by CGI and photographic elements in composite shots, most obviously in Forrest Gump's manipulations of familiar TV images. Not only are the figure-ground relationships that earlier matting techniques established as the horizon of cinematic action rendered fluid, so that the possession of the spatial foreground is moot (for example in the addition of imitation emulsion scratches to reconstructed footage), but the two components of the image conflict in their temporalities. So the CGI crowds in the Vietnam demonstration occupy a time other than that of the photographed Tom Hanks, just as he occupies a different time to the archive footage of Nixon and Kennedy. The digital image is at once delayed and premature, occupying the zone of the real numbers -- the infinitessimals, constantly approaching but never touching the full zero of cinematic presence.

I take my sense of zero from Frege: 'Since nothing falls under the concept "not identical with itself", I define nought as follows: 0 is the number which belongs to the concept "not identical with itself"' (Frege 1974: 87). This zero is not nothing but the productivity of a state which is at once the origin of the number series (as self-differentiating) and its goal (as the zero sum of total activity). The filmic 'fullness' constructed in the congreuence of film time with subjective time is broken in the digital media through the constant flickering of the digital file between existence, erasure and permutation. Though still not absence, this is not presence in the phenomenological sense. It is a subjunctive mood of being, a moment in which subject and object are as like as not to go their separate ways. The destiny of film, increasingly seized upon as a theme in contemporary Hollywood (Titanic, Good Will Hunting, Phenomenon, The Matrix) is to exist as a prerecorded event whose unfolding we can guess about, but which in any case pre-exists the viewing
moment. In digital media, that certainty no longer obtains. Because we can crash, willingly, accidentally or through external circumstances, the digital is ephemeral. The Apple philosophy -- an uncrashable machine -- and the Windows NT philosophy -- a fast-recuperating machine -- are equally misguided: aesthetically, there is no reason to avoid the crash and every reason to embrace it as intrinsic to the toolbox of digital techniques, as is happening increasingly among the new generation of digital artists. Attempts to foreclose or marginalise the crash belong to an alien and outmoded aesthetics, one that gave birth to the desktop computer in the second office revolution, but to which we no longer need to adhere: the aesthetics of efficiency. The various normative cinemas of the mid twentieth century -- total film, realist film, classical film -- were indeed efficient in this sense: reliably teleological. The digital media, considered in their temporarities, are no longer so. Nor are they entirely 'zero' media, in the sense of invisible principle of motion as difference that Vertov (1984) described as the interval, the principle of Lyotard's acinema (1978). We are dealing here with the infinitessimal as a principle of cinema, itself a permutation of the forgotten origin of cinema in the animated cartoon: not zero as foundational difference, but the infinitessimal's difference from difference.

In number theory, zero produces one, unity, and unity produces multiplicity: that interplay of unity and multiplicity is the grounds for the temporality of film as it is played through in the codes of cutting -- framing, compositing and editing. The animated line however is a vector. It has momentum and direction rather than the coordinate space of the interval and the cut. Its freedom to mutate endlessly is analogous to the weird mathematics of infinity. In Cantor's hands, set theory, the foundational theory of modern mathematics, confronted the multiplicity of infinities, and arrived at the problem of undecidability. The undecideable in turn would lead to Gödel's theorem, Turing's halting problem and Cohen's extension of undecidability to all mathematics. Undecidability is at the heart of the logic driving the digital computer, as it is a quality of the fantastic metamorphoses of the line in the kind of animation that Emile Cohl undertook in Fantasmagorie (1908; see the frame-by-frame analysis in Crafton 1990). Like algorithmically generated CGI, Cohl's art is produced by subordinating human to mechanical creation. The result is an unforeseeable evolution, even if it is guided by a human hand towards a particular line of development. As Gertrude Stein said of Detroit (?), there is no there there. Read, process, write: there is no still point of presence in the digital, only the miniature times of the machine's internal clock, ticking at rates far beneath human perception. Where Benjamin saw in high-speed photography evidence of an optical unconscious, we can point in the digital image towards a horological preconscious whose ticking disturbs the presentness of the image's presence with its promise that the initial state of the system can never be determined with sufficient precision to allow complete foresight of its outcomes. In every digital frame the future has already bifurcated and is in full cascade. That is why it takes every effort on our part, from protected mode to browser windows, to curb the tendency of the machines to plunge into reckless and chaotic productivity. The dialectic of emergence and constraint is the heart of the new media arts: the machines, after all, need our sense of form.

The juxtaposition of render time and the time of forgetting suggests further aspects of digital temporality. Forgetting is a labour too, as memory was. As Langdon Winner wrote, technology 'allows us to ignore our own works. It is a license to forget' (1977: 315). Expanding on Winner's thesis, Lorenzo Simpson proposes that

To time, the contingency that it bears, the loss that it brings, and the irreversibility that it insures, technology responds with a feverish will to surpass, ever haunted by the spectre of insecurity, of undomesticated time. (1995: 66)

Simpson's theme is that technology is a striving against mortality, his example in the immediate context word processing as 'a species of functional immortality' (Simpson 1995: 66). I think he is wrong, but for interesting reasons. Certainly historically technology has been haunted by the terror of the future into which nonetheless it has thrown itself in the pursuit of some control. But that description fits historical technologies, especially 19th century technologies like the cinema, far better than it does the electronic media and digital media especially. My contention is that the preeminence of forgetting as a mode of time in digital media is exactly such an 'insecurity of undomesticated time'. In foregrounding the labour of technology itself, rather than simply human labour, as download, and at the same time privileging the duration of the crash as a mode of immanent erasure, the digital, it seems to me, inhabits mortality, far more so than the attempts to overcome it typical of the photomechanical media encumbered with Bazin's
As undomesticated time, surpassing human perceptibility in their workings but nonetheless demanding that we wait for them to do their tasks, engines of immense productivity that also wipe, corrupt and otherwise mutate our files, the digital media open up the infinity of the very small for us, placing us not precisely in a mythologised phenomenological present but rather in an ontological state that is neither metaphysical Being nor epistemological paradox of the knowing subject with no unmediated knowledge. Within this ontological present are infinite gradations, samples so fine we cannot distinguish them as such but only as the continuous becoming of otherness, a bézier curve whose 'handles' are always in motion, the present as sine-wave whose next motion is entirely unpredictable.

I want to distinguish this mobility of an unstable present in the digital media from another phenomenon that more closely recalls Simpson's thesis of a technological temporality set against mortality, the sublime time of a certain form of special effect which I wrote up in the introduction to a recent issue of Screen (Cubitt 1999). That sublime time is the evacuation of a moment of time, an annihilation of time into a dimensionless non-Being which, I argue, is effected in effects like the spectacular explosions that mark films like Independence Day and Armageddon. Here the teleological time of narrative is interrupted by a fetishised time of spectacle, a duration without movement whose emblematic content is destruction, and whose thematic is the inhabiting of the time of mortality itself. In a way, this is a monumental time established within the perishable (but repeatable) moment, an unchanging time abstracted from time's linearity in the discipline of cinema.

'Sublime' time because of the difficulties I have with the ascendant Kantianism of Lyotard's later work (most importantly in Lyotard 1994), its readiness to go beyond the confines of the social, language, in favour of a direct connection with the great beyond. For me, that task is taken up not only in certain vanguard art practices but also in the blockbuster movie, and we should be wary of fetishising it again in media theory. Instead I want to place a small plea for the understanding of digital time as inherently ephemeral. To embrace ephemeral is to accept the changing nature of the world, the limits to our time in it, the common brevity of life and technology. In place of fetishising a death we have, since Heidegger, identified as utter and unnameable emptiness, to address the fullness of a life that incessantly generates difference and change, and in which we have the task of forming and informing. Moreover, to embrace beauty rather than the ephemeral is to embrace the social nature of a digital world. Harping on mortality belongs to a deeply selfish culture: it is always my death that I mourn. Seeking and constructing the sublime as a monument to that unspeakable béance is an act of determined (and overdetermined) solipsism. The beauty of the digital, beauty caught on the froth of the daydream, is always already social: it belongs to the sociality of the human-machine interface, the new community of the cyborg planet.

In conclusion, I do not want to deny what I have argued elsewhere (Cubitt 1998: 133-9), that the actually existing cyborg is the transnational corporate network with its human biochips. But neither do I want to surrender the fight in a sublime suicide pact with the Grim Reaper. Because they are efficient we should embrace efficiency's dialectical antithesis of labour and forgetting; against their empty instant the fullness of the processual present.

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