ENTANGLED MATTERS

Analogue Futures & Political Pasts

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THESIS CONTAINS

VIDEO

CD

DVD

TAPE CASSETTE

I Susan Schuppli hereby declare that the work presented in the thesis is my own.

Signature _____ ***Date*** ____ ____ ____

Abstract

Theorised as an "ontology of the output" my research project conceptually repurposes media machines in order to activate new or alternate entanglements between historical media artefacts and events. Although the particular circumstances that produced these materials may have changed, the project asks why these analogue media artefacts might still be a matter of concern. What is their relevance for problematizing debates within media philosophy today and by extension the politics that underscore the operations of the digital? Does the analogue as I intuit have the capacity to release history and propose alternate pathways through mediatic time?

Case Studies:

ARCHIVAL FUTURES considers the missing or 'silent' erasure of 18-½ minutes in Watergate Tape No. 342 (1972).

TELE-TRANSMISSIONS explores the 14-minute audio transmission produced by the Muirhead K220 Picture Transmitter to relay the image of napalm victim Kim Phúc from Saigon to Tokyo (June 8 1972).

RADIOLOGICAL EVENTS examines thirty-three seconds of irradiated film shot at Chernobyl Reactor Unit 4 by the late Soviet filmmaker Vladimir Shevchenko (April 26 1986).

This research turns upon a reconsideration of the ontological temporalities of media matter; a concern both *in* and *with time* which acknowledges that each of the now historic machinic artefacts and related case studies have always-already been entangled with the present and coming events of the future. The thesis project as such performs itself as a kind of "tape cut-up" that reorganises and consequently troubles the historical record by bringing ostensibly unrelated events into creative juxtaposition with one another. Recording asserts temporality; it is the formal means by which time is engineered, how it is both retroactively repotentialised and prospectively activated. Recording in effect produces a saturated ontology of time in which the reverberations of past, present, and future elide to become enfolded within the temporal vectors of the artefact.

Acknowledgements

As a machine for time-travel this thesis project literally would not have taken off the ground were it not fuelled by the philosophic provocations and abiding political questions raised by my two supervisors: Dr. Luciana Parisi and Dr. Eyal Weizman. I am deeply indebted to their critical insights and their generous support and encouragement throughout such an extended project. In particular, I would like to thank them for the many opportunities that they generated for mobilising the knowledges that I have acquired and for enlarging the scope of my research ideas and creative practice. They have both always insisted that the thesis move beyond its accepted role as an index of my time in graduate school and actively work to entangle itself within the polemics and politics of contemporary events and debates.

I also wish to make special mention of Dr. John Hutnyk who has likewise been the source of much ongoing support and has similarly encouraged me to take my work much further than I had perhaps first imagined was possible. We share many fond memories of Marx reading groups and travelling seminars to the University of Frankfurt and the Copenhagen Doctoral School.

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Fellow voyagers on this four-year journey have of course also been my many classmates and colleagues. In the Centre for Cultural Studies I would, in particular, like to acknowledge the friendships of Jeff Kinkle, Daisy Tam, James Burton, Andy Christodoulou, and Joel McKim. In the Centre for Research Architecture I wish to recognize the friendships of John Palmesino, Ines Schaber, Celine Condorelli, Angela Melitopoulos, Philippe Zourgane, Anselm Franke, Beatrice Gibson, Florian Schneider, and Andreas Rumpfhuber. A final acknowledgment must also go to my dear friend and fellow artist Patrick Mahon back in Canada.

In bringing this thesis project to a provisional close I thank all who have helped in propelling my ideas through time and space. Where they will next lead me I will not know in advance of the adventure, but I am convinced that this particular journey was indeed the decisive one.

London, UK, July 2009

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All supplementary materials (images, concepts, documents, and audio visuals) are archived in the Glossary and cross-referenced throughout the thesis text in red. Reviewing the Glossary index prior to reading the main thesis will help to explain the graphic and alphanumeric system used.

Some additional materials, not directly addressed by the thesis, also appear in the Glossary in order to provide further contextualisation and point to some of its research trajectories.

INTRODUCTION

Mixtapes & Tape Cut-Ups

"Perhaps when you cut into the present the future leaks out."[1]—William Burroughs

MIXTAPES: In each of the following case studies, a collusion of sorts seems to have taken place between an analogue technology—tape recorder, picture phone, movie camera—and a now historic event that resulted in the creation a of highly individuated media artefact. My point of departure is necessarily organised around these artefacts, each of which teleports conceptually through the thesis to activate discussions around the archive, media transmission, and the becoming of the event. The thesis project in response takes the outmoded format of the mixtape: sampling the archive, compiling records, and redistributing them into alternate critical media networks. In order to modulate the emphasis of the three chapters, only one aspect of the conjunction between the archive, transmission, and the event is amplified in each section although I continue to triangulate these constituent elements throughout the research project.

i) *ARCHIVAL FUTURES:* The first case study examines the archiving of 18-1/2 minutes of recorded silence by the US National Archives (NARA) in 1972. Inside their climate controlled vaults lies a solitary spool of 0.5-mm magnetic tape that is presumed to be a work of clumsy erasure by then-President Richard Nixon. Known popularly as the "18-1/2 minute tape-gap" in Watergate Tape No. 342 and branded the infamous "smoking gun", this slowly deteriorating media artefact has defied all technical efforts at conjuring up its latent sound-ghosts and restoring its lost speech acts: the trace evidence that will testify to Nixon's criminality in the Watergate break-in. What is of interest to me with respect to this case study is not the techno-revivification of the tape that might result in setting the historical 'record' straight, but rather the ways in which this soundless-gap, which in actual fact is not silent but animated by noisy clicks and hisses, might be reconfigured as sheltering virtual archives for the future. Contrary to the aims of the archive to preserve the residual memories encoded in its artefacts, this case study is predicated upon ransacking the archives and releasing its petrified objects from their paternal obligations to author particular versions of history. It understands that the tape-gap is perhaps even now, in its state of archival deep-freeze, more resonant with acoustic potential than it was at the time of its original voice recording in 1972. Tape 342 need not look to future salvage operations to extort a testimonial from its lingering magnetic tailings, for the recorded material and subsequent 'erasure' already speaks to us in many complex ways and on several different registers. That is, if we as researchers can readjust our modes of hearing and our means of interrogation. How might an analogue recording device such as a tape-recorder release history and allow it to machine a new "politics of futuric memory"? This is but one of the many entangled provocations that the 'silence' of Tape 342 helps us to unspool.

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[1] Lecture by William Burroughs, "Origin and Theory of the Tape Cut-Ups," Conference Jack Kerouac School of Disembodied Poetics (Naropa Institute: 1976).

ii) *TELE-TRANSMISSIONS:* Each case study begins quite literally with a media artefact that can be deemed a "limit-case" for the recording, archiving, and transmitting machine with which it is identified. Congruent with Tape 342, the subject of my first research chapter, the second also explores a highly politicised sonic event, but this time one located in the conversion of a photograph into a telephonically transmitted sound file. On June 8 1972 the Muirhead K220 Picture Transmitter took 14 elongated minutes to relay a series of audio signals from Saigon to Tokyo and then onwards to the US where they were reassembled into a B&W image to reveal a young Vietnamese girl running out of the inferno of an erroneous napalm attack. Better remembered as "the girl in the picture", Kim Phúc's anguished terror appeared a day later on the front page of the *New York Times* and papers nationwide. It is no doubt one of the most searing images to emerge out of the conflict in Vietnam and yet its iconic status as a visual artefact provides little evidence as to it secondary origins in sound, save the interface between the Muirhead's acoustic operations and the photographic representation of Phúc's silent scream. Understanding its genesis as also reliant upon sonic processing, I argue, is crucial for reactivating the affective potential of the image, which has by now largely dissipated through its prolonged public exposure. It is only at the threshold of a change in ontological intensity—the critical points of conversion between sound and image flows—that the relevance of the photograph can be renewed as a matter of ongoing concern and not simply a matter of fact consigned to history. Such theoretical transactions are only possible when we re-examine the modalities of media transmission that brought a particular incident into being as a multilingual event that can now speak through time. Taking an outmoded machine like the Muirhead Picture Transmitter seriously helps us to discern the specific attributes of the analogue that can still raise useful questions for rethinking emergent informatic processes today.

iii) *RADIOLOGICAL EVENTS:* My final case study begins with an examination a short film sequence shot at Chernobyl's Nuclear Reactor Unit 4 by the late Soviet filmmaker Vladimir Shevchenko on April 26 1986. What both surprised and perturbed the filmmaker were the small incandescent markings that mysteriously appeared upon the film when he first developed his footage. This time the ghosts were real and present. Unlike the intercessions by NARA to raise the technological dead from the remaining few magnetic particles that clung to the tape-gap, these trace elements are still dangerously alive; in truth they are radioactive. French philosopher of science Isabelle Stengers provocation that we need to listen to the stories the material wants to tell us, is returned twice over as the material not only speaks and has a story to tell, but speaks directly and brazenly back at us, given that its radiological voice-print continues to breach the containment of its filmic matter.[2] As an irradiated artefact capable of discharging its contaminates into the far distant future, Shevchenko's documentary film should no longer be thought exclusively in terms of its representational status an index pointing to an event that occurred outside of the cinematic apparatus, but must now be confronted as an

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[2] Stengers stresses that we need to consider "the possibility that it is not man but the material that 'asks' the questions, that has a story to tell, which one has to learn to unravel." Isabelle Stengers, Power and Invention: Situating Science, trans. Paul Bains, Theory out of Bounds, eds. Sandra Buckley, Michael Hardt and Brian Massumi (Minneapolis: University of Minnesota Press, 1997). P. 126.

actual toxic event that is archived directly within its material substrates. The nuclear fallout captured by his film forces a rethinking of the ontological nature of mediatic matter as the lethal atmosphere of Chernobyl remolecularised the film's emulsive matter to create a dangerous new form of cinema. One that reminds us that the future is, in effect, always-already here, always-already conjoined to the past by way of a radiological present. Rewinding the film or playing-back the historical record never returns us to an absolute beginning, but always fast-forwards us through multiple time-scales of which the past is but one of the many resources that the present has at its disposal to rework the future. Transformed from an ontology of inert being into one of radioactive becoming links this media artefact conceptually with the two other case studies that I have briefly sketched out. Each of which is itself concerned with the ways in which out-dated analogue technologies akin to the tape recorder, picture phone, and movie camera become adaptive time machines: transformed into devices for time-travel and for machining time. Machines whose inscriptive modalities open up opportunities for resampling the past but who also harbour virtual opportunities for recording the incoming voice of future events.

MULTI-TRACK PLAYERS: Unlike the media machines and objects that populate philosopher Friedrich Kittler's flat ontology, my artefacts are recursively constituted and find their historical relevance within the topologies of a sedimented terrain in which the past is continuously modulated and reshaped by unknown forces coming from the future. As such they cannot be reduced to standing-in for mediatic matter in general but must be understood as historically contingent; defined not simply by the coming together of events and technologies, but rather by the ways in which a specific event and a certain machine have come together and created an artefact. It is their coming together in particular ways that matters and not merely the facticity of their being.[3] In Kittler's view, the media machine only produces a recording of what is—what exists. "Not everything is culturally constituted, some things are just given."[4]

Although Kittler's triadic structure: storage, transmission, and processing is somewhat congruent with my own: archive, transmission, and event, he explicitly brackets off the affective and experiential domains of matter, which he associates with a form of human subjectivity and thus consciousness. Although I concur with Kittler that recording is a form of inscription that does not require a perceiving subject, but neither is its machinic matter immune from sensate processes of perception. "Plants and animals perceive, in that they cause and respond materially to changes in their environments, but they do so without subjectivity; so too do micro-organisms as well as inorganic structures like crystals. Machines perceive in this way."[5] As perceptual apparatuses capable of registering the passing of

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[3] "The singularity of an event is based not simply on the coming together of prehensions, but on their becoming together in a particular way. The question as to whether an entity—a scientific artefact or work of art for example—is 'real' or whether it is a 'representation' is thus displaced in favour of the question as to what it can do." Mariam Fraser, "Event," Theory, Culture & Society 23(2-3) (2006). P. 131.

[4] Scott Lash speaking about Kittler in the MA "Cultural Studies Seminar," *Goldsmiths University of London* (Fall 2005).

[5] T. S. Murphy, "Quantum Ontology: A Virtual Mechanics of Becoming," Deleuze and Guattari: New Mappings in Politics, Philosophy and Culture, eds. Eleanor Kaufmann and Kevin Jon Heller (Minneapolis: University of Minnesota Press, 1998). P. 214.

temporal events, the media machines of my research are able to activate connections that are retroactive as well as prospective. This is only possible because the artefacts that they produce are intra-expressive, embedded in a dynamic and changing world that allows them to simultaneously retain their indexical specificity while still ensuring that they remain open to the contingencies of history. Consequently the discussions that follow concern themselves not with the generalised socio-cultural histories of the tape recorder, picture phone or movie camera, but with a unique encounter between a singular machine and an event-dimension out of which a heterogeneous and distinctive artefact was produced. These media artefacts, when conceptually extracted from the archives, strategically deterritorialized and carefully reintroduced back into their machinic habitats are able to generate strange new couplings that call into question their particular "carnal mooring" within the space-time inscriptions of official history. In directing my forensic attentions to the compressed space of a single act of machinic articulation, extensive spaces of creative conjunction between and across objects, events, and ideas are revealed. To construct the thesis out of minute entangled particles is to "assemble" writes Walter Benjamin in *The Arcades Project,* "the large-scale constructions out of the smallest and most precisely cut components. Indeed, to discover in the analysis of the small individual moment the crystal of the total event."[6]

VARIABLE-SPEED RECORDING: The media artefacts under consideration are of a very limited duration (18-1/2 minutes, 14 minutes, and 33 seconds) and in this sense mobilise a counter-concept of the "modest witness."[7] Rather than the modern notion of the witness as an impartial, even self-effacing agent able to make unequivocal 'truth claims' on behalf of the object-world which it perceives as one of transparent factuality, my artefacts are modest in their attributes and inclined towards speculative musings and proposition making. They are emphatically "of" the world, indebted to its material affordances, rather than mere observers of its phenomenological passing. These are small and perhaps even minor bits of machinic detritus that populate an object-world, which is as amenable to modification and change as that of any living entity. And although diminutive in scale, they harbour enunciatory capacities that can testify on behalf of much larger political events.

A DEBATE: I turn back towards these particular artefacts (audiotape, photograph, film) because they were also witnesses to the historical transition and emerging power struggle between analogue and digital media technologies, as the latter relegated mouldy materiality to the dustbin of technoculture, replacing its carbon impurities with the evanescent luminosity of silicon

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[6] Walter Benjamin, The Arcades Project, trans. Howard Eiland and Kevin McLaughlin, ed. Rolf Tiedemann (London: Belknap Press, 1999). P. 461.

[7] In a critique of scientific objectivity, Donna Haraway looks to Steven Shapin and Simon Schaffer's treatment of Robert Boyle (1627-1691), chemist and inventor of the air-pump in order to examine the notion of the modest witness which she contends is "one of the founding virtues of what we call modernity. This is the virtue that guarantees that the modest witness is the legitimate and authorized ventriloquist for the object world, adding nothing from his mere opinions, from his biasing embodiment. And so he is endowed with the remarkable power to establish the facts. He bears witness: he is objective; he guarantees the clarity and purity of objects. His subjectivity is his objectivity. His narratives have a magical power—they lose all trace of their history as stories, as products of partisan projects, as contestable representations, or as constructed documents in their potent capacity to define the facts. The narratives become clear mirrors, fully magical mirrors, without once appealing to the transcendental or the magical." Donna Haraway, Modest-Witness@Second-Millennium.Femaleman-Meets-Oncomouse: Feminism and Technoscience (New York Routledge, 1997). P. 24.

processors. However even the seemingly immaterial procedures of contemporary computational machines are still subject to their direct interaction with material processes. As N. Katherine Hayles writes: "The physical attributes constituting any artifact are potentially infinite; in a digital computer, for example, they include the polymers used to fabricate the case, the rare earth elements used to make the phosphors in the CRT screen, the palladium used for power cord prongs, and so forth."[8] Materiality, as I will argue throughout the following chapters, resides at the core of this thesis as that which binds the ontological properties of the cultural object: its capacities and tendencies, to the specific temporalities of the artefact: its histories and its politics.[9]

As medial artefacts which can speak through time, each contains quite literally a necro-archive within its material substrates—a spectral trace of a dead and deadly past made visible and/or rendered audible by the exertions of the future and the present upon the past. Consequently they physically accrue over time as incoming information imprints itself directly onto their archival bedding. These futuric inscriptions don't cancel the present or the past by erasing previous histories but perform themselves as a kind of overlay creating feedback loops between different temporal registers. It is important to bear in mind that only the analogue is acquiescent to such ongoing topological deformations. Only its material substrates (magnetic tape and filmic emulsion) can archive multiple superimpositions while still retaining the expressive singularity of each successive layering. Only it can suspend radically divergent temporalities within the same delimited space. The digital is immune to such sedimentations and ontological graftings, as any incoming information is subject to its immediate recalculation producing a new value, but not a condition of spatialised difference.[10]

Although data storage in digital domains regularly takes the form of a materially inscriptive process, for example the laser superheating of a dye layer on CD-ROMs to produce micro-depressions that reflect light and can be read optically, this form of digital etching doesn't allow for the emergence of "hysteresis". Hysteresis is a condition of persistence common to analogue media whereby the previous states of a system remain discernable as residual memory traces.[11] Arguably I could physically scratch the surface of a disc in the manner of glitch artists to produce noise that would hamper the integrity and playback of the original information encoded on the CD or DVD. But what I will be referring to throughout this project are the modes by which new or additional information comes to supplement existing media materials by virtue of the 'natural' operations of the machine and not deliberate acts of interference perpetrated by external agents intent upon subverting such processes. As a lag-effect between information removal and its reapplication, hysteresis is frequently evidenced in recordings made on magnetic tape in which

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[8] N. Katherine Hayles, Writing Machines (Cambridge: MIT Press, 2002). P. 32.
[9] See "Do Artifacts Have Politics?" in Langdon Winner, The Whale and the Reactor: A Search for Limits in an Age of High Technology (Chicago: University of Chicago Press, 1986). Pp. 19-39.
[10] Computer forensics is able to discern "data remanence" or trace evidence of previous data inscriptions that sit alongside more recent encodings. Although erased digital data is "flagged" by the system as space that is now available for overwriting, data may remain in a residual or partial state of inscription until required, which in turn may also allow it to be recovered by the appropriate technique. See "Every Contact Leaves a Trace" in Matthew G. Kirschenbaum, Mechanisms: New Media and the Forensic Imagination (Cambridge: MIT Press, 2008). However I still maintain that the phenomena of data remanence does not produce "thick" or topologically sedimented artefacts but merely extends data in space horizontally.
[11] Kirschenbaum, Mechanisms: New Media and the Forensic Imagination. P. 3.

particles relating to earlier recordings still cluster around the edges of the tape having escaped their complete demagnetisation.[12] The only way to ensure the complete demagnetisation of an object is by subjecting it to an inverted magnetic field. The housing of digital data, in contrast to the archiving of analogue information, follows a logic of extension, that is, one of horizontal distribution as the system finds the additional space (although not necessarily contiguous) needed to store and organise its data. Whereas the analogue, I contend, follows a topo-logic that is vertically inclined towards repeated layerings and sedimentation: information amasses and thickens over time rather than extends itself in space.

Software does have a history but a digital bit does not carry a signifying history within itself. The computational archive only appears at the level of its coding sequences when a programmer leaves trace-evidence indicating that an application has been tweaked or adapted. A cursory examination of almost any commercial software reveals the hundreds of programmers who've trailed through its coding chains over the years.[13] For example, the scrolling screen credits that appear when launching the Photoshop application alerts us to the aggregate coding modifications that one will find within the binary sources of the program itself. History operates a different scale within the digital realm and this is the primary distinction to made at this point with regards to the analogue artefact and its relevance for conceptualizing time. With the emergence of quantum computing this will change yet again as the "qubit", a mathematical entity that exists in a state of digital superposition, will be able to occupy the positions of both zero and one simultaneously. The as-of-yet unrealised qubit will have profound implications for our understanding of digital potential. Before the numeric decision of either zero-or-one is realised there is an interval—this is the constrained locus of possibility within the digital machine of the classical bit. "Digital technologies [writes Brian Massumi] in fact have a remarkably weak connection to the virtual, by virtue of the enormous power of their systematization of the possible."[14] With the impending mathematical realignments suggested by quantum computing, the scene or expression of digital intensity will itself require fundamental reorientation, but for now it is only the analogue that can mine its embedded virtualities to actualise multiple heterogeneous states [narratives] at the same time.

Another distinction concerns the indexicality of the analogue in asserting that "this was", that this event—Watergate, Vietnam, Chernobyl—actually occurred. Whereas the digital, when coupled to an image or sound, always "suspends a certain spontaneous belief" in that one is never entirely certain that what is seen or heard actually ever existed.[15] This lack of conviction remains in spite of the fact that the analogue's potential for manipulation is an attribute that it shares equally with the digital.

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[12] Even natural systems like metallurgy can manifest signs of hysteresis. A chunk of iron for example will retain a certain degree of magnetisation long after its removal from an external magnetic field. Marvin Camras, Magnetic Recording Handbook (New York: Van Nostrand Reinhold Company, 1988).
[13] See Ellen Ullman, Close to the Machine: Technophilia and Its Discontents (San Francisco: City Lights Books, 1997). Pp. 21-24.
[14] Brian Massumi, Parables for the Virtual: Movement, Affect, Sensation (Durham: Duke University Press, 2002). P. 137.
[15] See Bernard Stiegler's essay "The Discrete Image" in Jacques Derrida and Bernard Stiegler, Echographies of Television: Filmed Interviews, trans. Jennifer Bajorek (Cambridge: Polity Press, 2005). P. 150.

In his well-known essay "On the Superiority of the Analog" Massumi argues that even digital-sound is always perceived by the body in analogue form as continuous sonic movement that washes over the body to activate its various sensing mechanisms. "*The processing may be digital—but the analog is the process.*"[16] As soon as a digital audio file is released by the machine and carried aloft by airborne particles towards a receptor ear, it does so by converting pulses into sine waves that surf the atmospheric topologies of cosmological smooth space. Because the physiology of our [animal] bodies does not provide us with an internal calculative system capable of processing acoustic material as discrete digital units, any incoming sound-data is always experienced as a continuum—a flow of sensations. Whether generated by the felt-vibrations of the eardrum or the rustle of hair follicles on skin, the body composed as such, is naturally predisposed towards the analogue as its fundamental mode of sense perception. This in turn suggests that "experience" (as it relates to organisms) is itself a form of analogic sensing. Likewise history must also be understood in these more fluid terms. Rather than the chronological date-stamping that has come to define history as a series of successive and static temporalities, our understanding and use of the term "history" throughout this thesis must be conceptualised as analogical; tending not towards a progressive arc that cuts it into metric "units of time" (of which there are apparently 73 distinct subcategories) but as a process of sedimentation, whereby a vast "spectrum of time-scales" are nested and engage in feedback between differently constituted temporalities. Recognising time as a recursive allows us to rethink history as a kind of analogue operation that is subject to ongoing transformation rather than as a numeric entity for describing the passing of fixed events.[17]

A METHOD: The conviction that guides my research contends that "entanglement" theorised by quantum physics as non-local or voodoo-like communication between sub-atomic matter, can be usefully redeployed as a conceptual method for considering the ways in which historical media artefacts might teleport through space-time to activate different registers of articulation that are discursively non-aligned with the past into which they had previously been sedimented. As Donna Haraway has suggested "redistributing the narrative field by telling another version of a crucial myth is a major process in crafting new meanings. One version never replaces another, but the whole field is rearranged in interrelation among all the versions in tension with each other."[18] Entanglement can assist in redistributing existing narratives, which in the case of media histories have tended to anchor the media object in a chronological narrative about progressive complexification resulting in the splitting of the data stream as per Kittler. Its innovation lies in its ability to conceptualise non-linear and non-contiguous relations across time while still maintaining a certain degree of connectivity. In encouraging strange or alternative alliances, entanglement becomes a methodological catalyst for subverting inherited teleologies and for drafting speculative fictions whereby an artefact may find its enunciatory resources in radically distributed accounts of social and material relations. Moreover, in providing a critical tool for capturing the spatio-temporal expressions of my media materials, entanglement reveals how

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[16] Massumi, Parables for the Virtual: Movement, Affect, Sensation. P. 142.
[17] See "The Actualization of the Virtual in Time" in Manuel DeLanda, Intensive Science and Virtual Philosophy (London: Continuum, 2002). Pp. 82-116.
[18] Donna Haraway, "Primatology Is Politics by Other Means," Feminist Approaches to Science, ed. Ruth Bleir (New York: Pergamon Press, 1986). P. 85.

processes of recording require their exo-strategic coupling to a machine and an event-horizon in order to "provoke" as well as "cut" transmissional flows between the past and the future. *(See Glossary entries Entanglement & Clairvoyance for discussions as to its theorisations within quantum experimentation.)*

→ E301 ENTANGLEMENT / C201 CLAIRVOYANCE

"Voodoo contravenes locality." My version of entanglement, although indebted to a precise understanding of its quantum underpinnings, concerns media objects and events operating primarily within macro-domains whose like-attributes, some of which are indeed micro-perceptual, enable them to produce innovative social and political assemblages across heterogeneous realms of articulation. And while their properties and histories may be provisionally shared, thus permitting their creative entanglement, they still retain their autonomy allowing them to be resequenced with other coding chains or events. This is crucial for understanding the provocations of the thesis in that the resonances produced by each media artefact do not rely upon their spatial proximity to an originary event for their ongoing legibility and relevance but are crafted by their movement through time which we will come to understand as the temporal dynamisms produced by the event.

Because of its insistence upon the "ontological inseparability of matter" entanglement is also a useful tool for *working* the thesis materials since it demands that the modalities of the metaphor conventionally invoked by notions of entanglement to describe processes of creolisation and complex intertwinings are transformed into an actual account of how matter performs its relationality.[19] Like so many concepts that have been 'poached' from the sciences by the humanities, entanglement is a fairly loose term that can service many discourses but not everything can be entangled. It must be used with a certain strictness so that what is available for entanglement concerns media objects and events, whose aesthetic, cultural, and political attributes are shared and operate at the same level (although they are not reducible one to the other). Generally speaking when attributes (originating from different source materials) come into focused alignment, it is their capacities or tendencies towards a certain state of being and not merely their signifying content that permits their mutual entanglement. As such it cannot be used to make indiscriminate connections between entities situated at entirely different registers and composed of entirely different ontological properties. Therefore rather than invoking entanglement as a narrative device to explain conjunctive relations and states of interconnectivity, I propose that we attempt to use it as an actual method for generating different meanings and alternate access points into existing sites of knowledge production. At the very least this is the conceptual and practical aim that this research project aspires to, while recognising that its efforts at entanglement will, by necessity, be somewhat constrained by the parameters of the thesis [its word length]. Creating innovative forms of medial entanglement opens up new territories, activates other temporal registers, and invents categories that don't as-of-yet exist. This is the ongoing project to which I am committed.

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[19] See Karen Michelle Barad, Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning (Durham, N.C.: Duke University Press, 2007). P. 385. See also Irit Rogoff, "What Is a Theorist," Was Ist Ein Kunstler?, ed. Katharyna Sykora et al. (Munich: Wilhelm Fink Verlag, 2003).

MIXMASTERS: Compiling categories of expression that as-of-yet have not been mixed together requires improvisation as well as sound engineering work on the part of the researcher who must have an ear for the rhythms and clamour of history. In order to reflect critically upon the ways in the machine not only prospectively performs the future, but also the ways in which it problematizes the past and thus complicates its attendant media ontologies, we need to consider the singularity of each machinic utterance. Gilles Deleuze argues that it is only the "metamorphosis or redistribution of singularities that forms a history" and that "each combination and each distribution is an event."[20] In short each media machine is characterised by a set of singularities that express conditions and bear upon a series of problems to which we may be attuned. This is the political dimension of the machinic event. Its mode is that of the problematic, but "it" itself is not a problem requiring our intercession. Our task, following Deleuze, is therefore that of "problematizing human events" which in the case of the thesis are entangled events that come into being through the transmissions of the recording machine.[21]

NECESSARY BETRAYALS: "A new discourse is being constructed, which explicitly distinguishes between the things that interest scientists and the things that interest the people who study scientists."[22] Using a conceptual tool derived from quantum physics in order to reflect upon media should not be perceived as a licentious act of appropriation, but rather as another means by which science may enter into a productive relay with culture to develop alternate analytic tools and produce new theoretical frameworks. Sometimes a certain form of betrayal is necessary when concepts migrate to inhabit other domains of experimentation. Manipulating theories and ideas not simply at the level of metaphor but at the level of their coding [their infrastructure] may require acts of infidelity if processes of conceptual peregrination are to find their relevance within other spheres of activity.

"When you poach a scientific concept, it carries with it scientific affects."[23] Clearly the micro in physics and the micro in culture don't operate at the same scale and can't neatly be mapped one upon the other, but as Massumi contends, a certain "residue" always carries over from one domain into another—its affects—and this is what can be repotentialised through acts of critical poaching. "When you uproot a concept from its network of systematic connections with other concepts, you still have its *connectibility*."[24] A transaction forged between disciplines in which entanglement is not simply a question of creating counterfeit connections that make a sham of the systems of science, but of connecting its affects in ways that matter equally to the sciences and the humanities and that can ideally bring about changes in both. What has long sustained my interest in quantum physics more generally and entanglement in particular, is the rebellious strangeness of our subatomic worlds exemplified by the forces of non-proximal communication or voodoo that challenge the many givens which structure our daily lives. It is this affective resonance of the "weird" that has largely dissipated when the concept has been

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[20] Gilles Deleuze, The Logic of Sense, trans. Mark Lester, ed. Constantin V. Boundas (New York: Columbia University Press, 1990). P. 56.
[21] Deleuze, The Logic of Sense. P. 55.
[22] Isabelle Stengers, The Invention of Modern Science, trans. Paul Bains, Theory out of Bounds, eds. Sandra Buckley, Michael Hardt and Brian Massumi, vol. 10 (Minneapolis: University of Minnesota Press, 2000).P. 8.
[23] Massumi, Parables for the Virtual: Movement, Affect, Sensation. P. 20.
[24] Massumi, Parables for the Virtual: Movement, Affect, Sensation. P. 20.

appropriated by the humanities and charmed into mere metaphor. Betrayals typically sustain a high degree of melodrama; they are intensively charged and their treachery should never be taken lightly. But even rousing metaphors must be reworked so that they operate in creative co-evolution with their scientific counterparts. "In other words, part of the idea is to put the humanities in a position of having continually to renegotiate their relations with the sciences—and, in the process, to rearticulate what is unique to their own capacities (what manner of affects *they* can transmit). This imperative to renegotiate adds an element of diplomacy to the piracy."[25]

COPY/WRITE: In his short text "Chronotope" literary theorist Luis Alberto Brandão explores the movement of concepts between the sciences and the humanities. He does this by examining the category of space-time advanced by Einstein in his 1905 paper "On the Electrodynamics of Moving Bodies" and subsequently by literary critic Mikhail Bakhtin in his 1975 essay "Forms of Time and of the Chronotope in the Novel". It is worth noting that Bakhtin's use of the actual term "chronotope" to designate the construction of space and time as constitutive of genres was itself borrowed from the research of Soviet physiologist A. A. Ukhtomsky who had delivered a 1925 lecture attended by Bakhtin on the chronotope in biology.[26] When a concept is adopted by a new discipline it undergoes a certain degree of transformation that Brandão argues results in its conversion into metaphor. Entanglement is a case in point, as its particular formulation within quantum mechanics refers to the actual physical state of subatomic particles, whereas its deployment within literature is generally one of metaphoric description. But this migration or mimicry should not be regarded as an impoverished form of the original, on the contrary, it is an affirmation of the creative potential of a concept to service many different discourses, to operate as both concept and metaphor simultaneously without taming either into complete submission.

"This field [the humanities] seeks to claim it scientific basis in two conflicting ways: in one, by drawing near to the natural sciences as a mode of positive and socially legitimated knowledge; in the other, by distancing itself from them through the attempt to establish theoretical and methodological specificity. This duplicity explains why; on a fairly regular basis, concepts are shared by disciplines, even if, owing to the particularities they take on, they can be regarded as metaphors in relation to another discipline's theoretical context. Independently of the degree of fidelity or freedom in the passage from one context to another, the concept-metaphors make up a common field of interest whose theoretical productivity and power of imaginative suggestion are seen in the developments appropriate to the limits and openings of each area of knowledge."[27]

While I have mentioned that my use of entanglement tries to maintain a certain consistency with regards to its physical heritage (the ontological inseparability of matter) I am also aware of the necessary betrayal that such a usage entails, one that at times requires the productive coupling of its ontological matter with the articulating processes of metaphor. Entanglement,

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[25] Massumi, Parables for the Virtual: Movement, Affect, Sensation. P. 21.
[26] See Alexandra Ganser, Julia Pühringer and Markus Rheindorf, "Bakhtin's Chronotope on the Road: Space, Time, and Place in Road Movies since the 1970s " Facta Universitatis: Linguistics and Literature 4.1 (2006). P. 1. See also the MA thesis by Lee Honeycutt, "What Hath Bakhtin Wrought? Toward a Unified Theory of Literature and Composition," The University of North Carolina, 1994.
[27] Luis Alberto Brandão, "Chronotope," Theory, Culture & Society 23.2-3 (2006). P. 134.

to riff off Brandão, "acts as a concept to which specific features are attributed and, at the same time, as a metaphor that evokes aspects of the Einsteinian concept. And yet, a rigorous separation between the two uses cannot be established either; to what extent the term aspires to generality, with its foundational and propositional function, and to what extent it does not have its own meaning, but merely operates in a diffuse and suggestive way by analogy, cannot be defined."[28]

In a conversation with Christian Descamps, Deleuze discusses a similar scenario with regards to his and Félix Guattari's use of concepts with a "scientific resonance" in their pioneering work *A Thousand Plateaus*. He states: "I'd like to reply by saying there are two sorts of scientific notions, even though they get mixed up in particular cases. There are notions that are exact in nature, quantitative, defined by equations, and whose very meaning lies in their exactness: a philosopher or writer can use these only metaphorically, and that's quite wrong, because they belong to exact science. But there are also essentially inexact yet completely rigorous notions that scientists can't do without, which belong equally to scientists, philosophers, and artists. They have to be made rigorous in a way that's not directly scientific, so that when a scientist manages to do this he becomes a philosopher, an artist too."[29]

"[I]ts to do with the way someone's own work can lead to unexpected convergences, and new implications, new directions, in other people's work. And no special status should be assigned to any particular field, whether philosophy, science, art, or literature."[30]

To borrow Einstein's concept of quantum entanglement and then rework it through a Deleuzian philosophic model is to consider entanglement not solely in terms of what it describes as a material set of circumstances: the mysteriously identical nature of particles in a state of superposition. But in terms of what it can also do as a set of operations: which is to create a space wherein concept and metaphor converge to pose questions about what can be established as a "potential fact" and what can be envisioned as a "propositional fiction". One of my ongoing tasks as a writer and an artist, following this injunction, is therefore to highlight the process of mutation as physics tries to work out this space theoretically within the domains of culture and aesthetics. Such processes of radical conceptual crossover between disciplines (sciences and humanities) can provide inventive new entry points into a set of problems by providing an alternate framework for critical assessment. As Stengers has always insisted science does not belong to the domain of the scientist alone, nor by extension should an interest in aesthetics or cultural processes remain exclusive to the jurisdiction of art and cultural studies. We need rather to be attuned to the ways in which different systems are already mutually affective.

Only when we take seriously the idea that all research practices offer up something from which we can learn, will we understand the problems posed by our research materials and media machines. This was the explicit challenge raised by Stengers in a keynote address titled

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[28] Brandão, "Chronotope." P. 134.
[29] Gilles Deleuze, Negotiations (New York: Columbia University Press, 1990). P. 29.
[30] Deleuze, Negotiations. P. 30.

"Divorcing Materiality From Physicality" (2007).[31] Materialism she argued must be reconfigured to ask questions about "what matters". The real materialist challenge is to refrain from passing judgment by picking and choosing practices that it perceives as relevant and likewise to resist from dismissing practices that its deems irrelevant. What is collectively accepted as "mattering" affects practice. By validating certain practices and rejecting others, potential tools for thinking are lost. For Stengers it is her work on sorcery that remains suspect, for Haraway it is the turn away from cyborgs towards her interaction with her dog Cayenne in agility training that has raised the collective scepticism of academia, and for myself it is an engagement with the weirdness evoked by quantum processes such as entanglement that I have pirated under the term "voodoo space" (the original working title of the thesis) that might appear as less than scientifically rigorous. And yet it is the fungibility of entanglement, its capacities for theoretical and disciplinary interchange, serviced by its dual nature as both a concept and a practice that confirms its broader applicability and permits its acquiescent to such cultural repurposing. Likewise voodoo space, from which the thesis gathers many of its conceptual resources, is itself an expression of an enfolded condition that refers both to that which can be factually demonstrated as well as that which can be creatively imagined.[32]

A QUESTION OF INTEREST: However the question of relevance must still be foregrounded as a necessary condition for any machinic entanglement between entities. Stengers has repeatedly cautioned us against deciding in advance as to what events and practices will provoke and perturb us. The issue for Stengers is emphatically not that of picking and choosing between [future] options but rather that of "relevance". This involves a risk, she cautions, that in learning "how to ask the right or relevant questions" we may need to abandon the very epistemological ground that produced the conditions for such an inquiry in the first place. "A problem must matter in order to get a possibly relevant answer."[33] Not all events—whether of the past, present, or even future yet-to-come—are equally interesting, but neither do problems matter equally for all entities. Her argument relates to a similar point made by Karl Marx in *Capital* in which he contends that the human only sets itself problems or recognizes as a problem something that it can solve.[34] "Houston, we've had a problem."[35] Something "must matter" for the human in order for the human to attend to it, otherwise it does not present itself in the guise of a problem but as a de facto condition or unalterable event. Climate change is a case in point, although ecological matter has long been registering the impact of human disregard upon its integrated systems, only when the environment was reinvented as a "significant" problem for humans, have we set about to try and fix it. Whereas the natural disaster, although it may be inextricably linked to human interference and actions, is still understood within western legal discourse and actuarial science as an "act of god" beyond the purview and agency of the human.

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[31] Isabelle Stengers, "Divorcing Materiality from Physicality," Conference Materials + Materialisms (Birkbeck, University of London: Radical Philosophy, 2007).
[32] See Brandão, "Chronotope." P. 134.
[33] Isabelle Stengers, "Diderot's Egg: Divorcing Materialism from Eliminativism," Radical Philosophy.144 (2007). P. 5.
[34] "Mankind thus inevitably sets itself only such tasks as it is able to solve, since closer examination will always show that the problem itself arises only when the material conditions for its solution are already present or at least in the course of formation." Karl Marx, "Preface," A Contribution to the Critique of Political Economy (Moscow: Progress Publishers, 1977).
[35] This is the oft-quoted phrase made by John Swigert, Jr. and James Lovell during the "successful-failure" of the aborted Apollo 13 mission to the moon in April 1970.

In his text *War in the Age of Intelligent Machines* Manuel DeLanda argues that many technological objects were already in place prior to their recognition as "useful" for human purposes, nor did exclusively human interests and needs necessarily guide such technological developments.[36] DeLanda develops the concept of "machine momentum" to show how alternative machinic emergences can occur, emphasising the roles that physical limitations such as those of speed, temperature, pressure, chemistry, and electricity have played in influencing technological developments. He uses the example of weapons manufacture in which physical thresholds such as the melting and crystallisation of metals, explosion, detonation, and fission points in combination with the natural phenomena of geography and weather systems, have all played critical roles in directing the development of a given technology. In formulating this argument DeLanda is indebted to Deleuze's conception of the "machinic phylum", a term Deleuze invented "to refer to the overall set of self-organising processes in the universe. These include all processes in which a group of previously disconnected elements suddenly reaches a critical point at which they begin to "cooperate" to form a higher-level entity."[37] Such a notion "blurs the distinction between organic and non-organic life" and suggests that machines and men are "ultimately related to a common phylogenetic line: the machinic phylum."[38] Once we begin to understand the machine as relationally produced through a constellation of aggregating forces: organic and non-organic, physical and energetic, human and non-human only then can we conceive of the possibility that something like a machine might have "interests" that are non-aligned with those of the human, yet for whom the human is also, of course, a matter of interest. Although our conscious determination tends to assume its privileged status within the world as the interpretative apparatus par excellence, it is in fact the materiality of the world that opens us up to interpretation.[39] Matter makes itself amenable to questioning and avails itself to our research interests and practices.

A question of interest is therefore not that of judgment, nor one of unmediated self-interest, but rather a mode of fascinated engagement provoked by the materiality of the world as it brings objects, events, and experiences together in particular ways that matter, in ways that capture our attention and absorb our interest. "To be interested by something [says Stengers] has the character of an event, since it gives to that something a power it does not generally possess: the power to cause us to think, feel and wonder, the power to have us wondering how practically to relate to it, how to pose relevant questions about it."[40] Machinic entanglements must therefore be understood as a site of conjunctive contingency folded between the open-ended becoming of future events and the modulating operations of the present defined in part by that which "interests" us.

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[36] DeLanda provides the example of the conoidal bullet, a 19th century invention that "resisted human control for over a hundred years. It simply took that long for commanders to integrate rifled firepower into an explicit tactile doctrine. Manuel DeLanda, War in the Age of Intelligent Machines (New York: Zone Books, 2003). P. 3.
[37] DeLanda, War in the Age of Intelligent Machines. Pp. 6-7.
[38] DeLanda, War in the Age of Intelligent Machines. P. 7.
[39] See Bruno Latour, "What Is Given in Experience? A Review of Isabelle Stengers Penser Avec Whitehead," Boundary 2 32 (2005), February 18 2006 <http://www.bruno-latour.fr/articles/article/93-STENGERS.html>. P. 3.
[40] Stengers, "Diderot's Egg: Divorcing Materialism from Eliminativism." P. 5.

A MEANS: "Media transmission is the becoming *of the event.*"[41]When Massumi suggests that media transmission is both a necessary condition and field of potential within which an event emerges he points to the crucial argument that will be made throughout this research project. Namely, that the event is not a separate and causal incident that activates the machine and produces a residual artefact such as a sound or image recording, but rather that the event "transpires" out an entangled performance between different kinds of machines. Whether these machines are analogue or digital in nature, social, technical, or political systems, human or non-human entities, organic or non-organic matter, they all require processes of externalization or transmission to bring the event in being for itself and all other machines. The event's future emergence is thus constituted by the machine's capacities to actualise any of its virtual tendencies in the present. And yet no future event can ever identify in advance what history it will eventually answer too, for what and for whom it will have been a question of interest or relevance. Nor are these transmissional flows about instantiating an outside that is radically separate from the machinic apparatus, but on the contrary must be conceptualised as co-extensive and co-constitutive with it in the sense of being an "intra-active" form of differentiation. Such processes are always recurrent and variable, governed not by laws of natural affiliation but by acts of creative synthesis and difference. As philosopher of science Karen Barad notes, "differentiating is not about radical exteriority but rather agential separability. That is, differentiating is not about othering or separating but on the contrary about making connections and commitments. The very nature of materiality is an entanglement."[42]

EVENT MACHINES: My thesis project focuses upon the ways in which particular media machines both produce and cut transmissions in order to draw variations from their flows and evolve emergent events. They do so by taking leave of one strand or storyline to pick up another. Prior to transmission an infinite number of events are hypothetically "ready-to-hand" but until their actualisation they remain in a state of withdrawal. When an account eventually comes into presence it impedes other possible events from registering, however these other stories remain fully virtual, that is to say, remain available for future tellings under the 'appropriate' inductive circumstances. This is not to suggest that a single autonomous machine is necessarily the catalyst for an event (although this may at times be the case), but rather that the event only "becomes" through processes of externalisation or differentiation between various kinds of machinic modalities [transmissions]. Fraser, Kember and Lury write:

"[T]he co-ordinates of space and time are not understood to be external to (relations between) entities. Change, that is, does not occur *in* time and space. Instead, time and space change according to the specificity of an event. The event makes the difference: not in space and time, but to space and time. Importantly, motion and change are attributable to differences *within* an event. Duration is the field for the event; there are as many durations as there events."[43]

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[41] Massumi, Parables for the Virtual: Movement, Affect, Sensation. P. 81.
[42] Barad, Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning. Pp. 392-3.
[43] Mariam Fraser, Sarah Kember and Celia Lury, "Inventive Life: Approaches to the New Vitalism," Theory, Culture & Society 22.1 (2005). P.4.

The event thus conceived as affective and continuous modulates the spatial and temporal dimensions through which the media artefact moves. Even though the event, as an actualised historical occurrence, may only ever have a local and temporally-specific validity, the artefact finds that its signifying vectors are receptive to active migration, in that the artefact can be repeatedly extracted from the archive, reassessed, and recontextualised.

For Deleuze the event is always conceptualised as a continuous becoming which confers the status of the infinitive upon it, whereas the event when extracted from the virtuality of the data-stream becomes an historical incident or unique occasion. Each signal relay in asserting its difference to any other potential event-making transmission eventually cuts one of these flows bringing a particular event into an immanent relationship with a particular present. The event actualised through this act of cutting or signal routing can be said to morph into an event that is different in kind to the unbounded metaphysical event theorised by Deleuze and yet it is precisely the elastic condition of the "infinite" that allows the event to be experienced anew each time it is reactualised.[44] Although the event exists in a state of mobile virtuality, its actualisation captures this movement and recasts it as an event that can now be named and stabilised. But this is not to suggest that the event is ever conclusively over. For example, the meltdown of the Chernobyl Reactor Unit 4 is not limited to the event space-time of the Ukraine on April 26 1986 given that the radioactive, in transgressing the boundaries of nuclear containment, has the transmissional and chemical capacity to reactualise the catastrophic event over and over again for years to come. (This notion of the radioactive as perpetually leaching its contaminating virtualities is developed and expanded upon in *Chapter Three: Radiological Events.)*

The event acts upon spatial and temporal domains because it is conditioned by an "interval" or transmission delay between the event-signals sent and those received [actualised]. As such it endures in perpetuity despite its multiple and particularised historical manifestations within chronological time. In this regard each event is always-already preemptively entangled with those transmissions yet to come as well as those that have already perished. "When the event-dimension migrates to a new space, its elements modulate. There is no general model for the catalysis of an event. Every time an event migrates, it transmits inductive signs."[45] However as Massumi notes the "interval of the transmission" or what might more aptly be called the virtuality of transmission delay is radically different than the "interruption of regulation" that occurs when electronic transmission signals are channelled back into the familiar patterns and representational formats identified, for example, with a particular television in a specific living room. The interval, following Deleuze, refers to a metaphysics of transmission in which its diffracted modalities are still in a state of contingency having yet to attach themselves to idiomatic and localised expressions.

"In the media interval, the event is a material but incorporeal immanence (an electron flow) moving through a dedicated technological milieu. When it is analogically reexpressed in televisual images, its conditions have drastically changed. Its substantial elements have been

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[44] See Fraser, "Event." P. 130.
[45] Massumi, Parables for the Virtual: Movement, Affect, Sensation. P. 81.

homogenized and reduced to fit sound speaker and screen. The event's ability to trigger a catalytic effect is no longer certain."[46]

Although a particular event has moved through or been activated by the transmissions of a particular machine and its technical operations, the event as previously suggested can never be entirely contained within its originary spatial and temporal coordinates, that is to say, its historical embeddedness—something is always left over. Untold stories, earlier failed transmissions—something always exceeds it signifying capacities thus complicating the integrity of any posthumous account. As Jacques Derrida has noted, "there is no representation or recording, no channel or transmission without the interruption and interference of a logic of supplementarity" that over-codes the event and shifts it narrative relationships.[47] Supplementarity recalibrates the event enabling it to activate other virtualities. This process of over-coding registers the presence of many hidden virtual worlds that have yet to be revealed or actualised; yet to be entangled. Sociologist Mariam Fraser, in her keyword citation on the event, states that we need to concern ourselves not with whether a relationship between an object and event is fact or fiction but rather with *what* a particular set of relations and a specific mode of belonging-together raise as questions.[48] The event produced by the machine is not a de facto state of affairs—unique and immutable—even though the originary artefact it created may be perceived as singular. The event becomes multivalent through the machine's transmissional capacities to forge innovative new encounters between the connective tissues of its singularities.

DEMO TAPES: Following Stengers, such propositional thinking which I take as one of the primary conditions for undertaking this research, assumes the quality of an event because propositions invoke a particular—often different—configuration of the world.[49] Likewise following Deleuze, the immutability of "truth" as an absolute condition applicable under every circumstance must be reconceptualised as merely conditional, shaped by the contingencies and variations of events that induce different possibilities for the status of truth over time. "The event is the condition of truth, the condition of what is possible to be true in any local situation."[50] In reallocating its resources so that it is understood as only ever having a local validity, truth becomes analogous to Stengers concept of a "propositional fiction" whereas facts by contrast, tend to denote representations of the world as it is commonly held within a given historical register. A transposition in short between what is collectively accepted as mattering [what is] and what might be given over in experience [what becomes]. Propositions dent our epistemological assurances; they call into question the determined limits of human knowledge systems entrusted with shielding us from the uncertainties of the world. They acknowledge that the human is only, as Deleuze would say, a problem amongst many others, but not the privileged sovereign problem.[51] They scramble and remix our stabile formulations

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[46] Massumi, Parables for the Virtual: Movement, Affect, Sensation. P. 84
[47] Nicholas Royle, Derrida, Routledge Critical Thinkers (London: Routledge, 2003). P. 56.
[48] Fraser, "Event." P. 131.
[49] Stengers, Power and Invention: Situating Science. Pp. 136-140.
[50] Fraser, "Event." P. 131.
[51] "Deleuze attempts to avoid placing the human subject at the beginning or center of his investigations [as transcendentally given]... This is not to suggest that the subject is not a problem; on the contrary; an account of

of the world in proposing new versions of events and telling other stories. Propositions are in effect demo tapes—sketches for ideas not yet officially recorded and released.

MEDIUM AS MESSAGE: Today media machines are still primarily conceptualised as providing delivery systems for content whether images, sounds, or data. This view persists in spite of the groundbreaking work done by thinkers such as mathematician Claude Shannon already in the 1940s around information theory and perhaps more notably by media theorist Marshall McLuhan in the 1960s. The conviction that information circulates independently of its material substrates and can be transmitted without variation between different mediums was pivotal to a new understanding of data as merely a signal passed between nodal points in a channel.[52] This definition of information as entirely abstracted, without signifying connotation, was developed by Shannon in his 1948 thesis *The Mathematical Theory of Communication* when he was a young researcher at Bell Laboratories.[53] Shannon defined information as a "probability function" with no dimensions, no materiality and no necessary connection with meaning. If according to Shannon, no message is ever sent, and what is transmitted is only a signal or placeholder for a message, than the process of meaning generation remains external to informatic transfer.

Likewise for McLuhan the medium itself becomes the content or message for each subsequent innovation, such that film as a technical system for organising sound and image flows became the content for television. Meaning in terms of a machine's capacity for producing narrative inflections is deferred to a secondary act of signification that requires the signal's productive coupling to an external interpretative apparatus that can decode its transmissional regimes and confer a form of contingent intelligibility. Somewhat surprisingly, given the revolutionary interlude of the digital that succeeded McLuhan's electronic age, my research finds that its conceptual anchors are indeed oriented once again towards his famous adage that "the medium is the message."[54] Contrary to the prevailing perceptions of media machines in the exclusive service of meaning generation, the machine is itself a potentiality for actualising new events and new politics, in that the event (what some might call the content) is itself preemptively inscribed within the operations of the machine. The machine is not simply a benign conduit for decoding and recoding incoming events but is an active agent in shaping the variable contours of the event. *(See Glossary entry Preemption for a more elaborated discussion on my modified use of the term as per Massumi.)*

→ **P401 PREEMPTION**

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the constitution of the subject will be one of the minimum criteria for a more adequate theory. The subject will be constituted, but as one of many possible effects that can arise from the principles of Deleuze's ontology." Murphy, "Quantum Ontology: A Virtual Mechanics of Becoming." P. 217.

[52] See chapter two in N. Katherine Hayles, How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics (Chicago: University of Chicago Press, 1999).

[53] Claude E. Shannon and Warren Weaver, The Mathematical Theory of Communication (Urbana: University of Illinois Press, 1948).

[54] Marshall McLuhan, Understanding Media: The Extensions of Man (Toronto: Signet Press, 1964).

A consequence of the shift towards the "propositional" is the unfeasibility of continuing to think media ontologies in terms of ends-means, that is, as deterministic and teleological. Instead medial practices and their informatic articulations (the becoming of the event) must now be understood as recombinant and inter-expressive, subject to ongoing variation, modulation, and reformulation. If media systems and machines continue to be conceptualised as transmitting devices for the "speech acts" of others rather than as enunciative devices in their own right, each with their own individuated material and ontological affordances, then we diminish the machine's capacities to that of a pro forma set of technical operations bound by their teleological heritage. In reducing the machine to a mere delivery system for content we loose an opportunity to think about the ways in which technologies might produce entirely new perceptual and conceptual accounts of machinic matter and experiences. Each of the thesis event-machines must consequently be understood as conditioned by and conditional to the specificities of history: as both capable of making history as well as becoming a condition for the making of new histories. Redistributing the ontological flows and intensities between machinic systems over time has the ability to alter existent relations by generating novel entanglements, which give rise to new questions and problems—issues that the following case studies must scrupulously grapple with if they are to convince us of their retrospective relevance. *(See Glossary entry Machinic Ontologies on questions concerning technology and the questions posed by machines.)*

→ M101 MACHINIC ONTOLOGIES

TAPE CUT-UPS: Theorised as an "ontology of the output" my research project conceptually repurposes media machines in order to activate new or alternate entanglements between historical media artefacts and events.[55] Although the particular circumstances that produced these materials may have changed, the project asks why these analogue media artefacts might still be a matter of concern. What is their relevance for problematizing debates within media philosophy today and by extension the politics that underscore the operations of the digital? Does the analogue as I intuit have the capacity to release history and propose alternate pathways through mediatic time? This research turns upon a reconsideration of the ontological temporalities of media matter; a concern both *in* and *with time* that acknowledges that each of the now historic machinic artefacts and related case studies discussed have always-already been entangled with the present and coming events of the future. The thesis project as such performs itself as a kind of "tape cut-up" that reorganises and consequently troubles the historical record by bringing ostensibly unrelated events into creative juxtaposition with one another.[56] Recording asserts temporality; it is the formal means by which time is engineered, how it is both retroactively repotentialised and prospectively activated. Recording in effect produces a saturated ontology of time in which the reverberations of past, present, and future elide to become enfolded within the temporal vectors of the artefact. When you cut into the past does the future leak out?

→ F301 HISTORY & ORIGINS OF TAPE CUT-UPS

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[55] I'm indebted to Luciana Parisi who first characterised my work as concerned with "ontologies of output".
[56] The origin of the term "tape cut-up" comes from Brion Gysin and William Burroughs experiments with the splicing of audio-tape to create acoustic montages or tape recorder cut-ups as they referred to them.

The Case of the Missing 18-1/2 Minutes

Our case study begins with a fundamental misconception—the tale of an event-machine in which a condition of "misplaced concreteness" has colluded with history—falsifying the record and throwing many an investigator off-track.

These are the facts that raised our initial suspicions:

- *An analogue tape recorder does not have an erase button.*
- *In order to erase one rewinds a tape and re-records over an existing track.*
- *The recording process must by definition and design record something, even if is the silent spooling of its reels and the redistribution of magnetic particles on tape.*
- *It is thus technically impossible to deliberately or accidentally erase anything.*

Now let's continue with a short story: a crime caper replete with a formidable male adversary prone to self-delusion and secrecy, a loyal secretary all too quick to take the fall, a well-intentioned archivist and a team of determined forensic detectives hot on the magnetic trail.

PRESS PLAY TO BEGIN. At some point during the evening of June 20 1972 a conversation between two men was secretly taped on a SONY TC-800B reel-to-reel voice recorder. An innocuous machine that uses 0.5-mm tape and was set to run at the irregular speed of 15/16 IPS—or half the rate of a standard tape recorder. In keeping with this low-fidelity recording mode, the tiny lavalier microphones that picked up this particular conversation were cheap and poorly distributed throughout the space. The result was a tape of degraded sound quality produced under deficient recording conditions.[1]

→ D101 / T102

FAST-FORWARD TO 1973. An entire nation is now magnetised by the pull of forces unspooled by this single reel of 0.5-mm tape. Tape 342, as it is officially referred to, is but one of a sprawling archive of approximately 3,700 hours of audio recordings taped surreptitiously by the late American President Richard Nixon over a period of several years. Known as the "Nixon White House Tapes" these recordings detail conversations between the President, his staff, and visitors to the White House and Camp David. Of the many thousands of audiotapes confiscated from the Oval Office, Tape 342 remains by far the most infamous. Not because of the damaging or volatile nature of the information it contains, but precisely because of its absence: a gap in the tape of 18-1/2 minutes. A residual silence which is haunted by the spectre of a man who refused to speak, who refused to fill in the gap and suture the wound that opened up the corruption of the American political system for all to see.

This gap takes place during a conversation between Nixon and HR Haldeman (White House Chief of Staff) three days after the break-in at Democratic National Committee Headquarters in

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[1] See Tom McNichol, Richard Nixon's Last Secret, 2002, Available: http://www.wired.com/wired/archive/10.07/nixon_pr.html, Nov. 25 2005. P. 3.

the Watergate Hotel. The timing of the conversation on June 20 and subsequent tape-gap so close to the temporal unfolding of criminal events at the Watergate Hotel have lead many to speculate that the tape must have contained highly incriminating evidence. Evidence, which perhaps implicated Nixon himself in the crime. American constitutional law, under the aegis of the Fifth Amendment, gives one the right not to speak on the grounds that such speech may be self-incriminating, it does not however, allow one to take back or "erase" something already spoken. Knowledge of the White House taping system (installed by the Secret Service in 1971) first came to public's attention during the testimony of former presidential aide Alexander Butterfield before the Senate Watergate Committee in July 1973 and although all recordings (legal or otherwise) stopped shortly thereafter, the equipment was not removed until after the disgraced President left office in August 1974.[2]

"Less than a week following Butterfield's revelation, Nixon ordered an end to White House taping. Shortly afterward, the Senate committee, Special Prosecutor Cox, and Judge Sirica ordered relevant tapes be turned over. Nixon refused, claiming executive privilege. By August the matter was in court. Nixon addressed the nation on August 15, 1973, explaining to the people why confidential conversations between the president and his advisors should not be made a matter of public record. Lawyers for the Watergate committee and Special Prosecutor's office argued that conversations dealing with matters of potential illegality should not be suppressed by claims of executive privilege."[3]

Tales from the Crypt

Although the muteness of both the tape and the man defied efforts to conjure forth 'truth' in 1973, the tape was implicitly understood as an important historical artefact and treated accordingly. Fear of disturbing the remaining few magnetic particles that clung to the 18-1/2 minute gap meant that after a mere half-dozen playbacks the tape was permanently removed from circulation and placed into the storage vaults of the US National Archives and Records Administration (NARA) located in College Park, Maryland. There the tape has lain undisturbed in cryogenic sleep for over 30 years, stored at precisely 65 degrees Fahrenheit and 40 percent relative humidity, waiting like a somnambulant bride for that moment when the kiss of technological progress will reawaken it. Moreover, the tape waits for an explicitly digital caress that will not only revivify but also restore its capacity to speak. Friedrich Nietzsche in describing the disconnect between certain inert forms of historiography and the vitality of everyday life writes "Here is snow, here life has grown silent; the last crows whose cries are audible here are called whereto fore, in vain, nada!"[4] Entombed within the hushed vaults of the archive, the rhetorical program of technology as deterministic and progressive, pledges to return the tape to the dynamism of the living. The archive leverages the crisis of the past, the partial erasure of Tape 342, against the projected technologies of the future. A wager that further developments in forensic technology will stave off the entropic incursions of time and revitalise the physical condition of the tape.

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[2] See the National Archives website for more detailed information. http://www.archives.gov/
[3] Anon., The Battle for the Tapes, 1973, Gerald R. Ford Library & Museum Available: http://www.ford.utexas.edu/museum/exhibits/watergate_files/content.php?section=3&page=a, Jan. 23 2006.
[4] Friedrich Nietzsche, The Genealogy of Morals, trans. W. Kaufman (New York: Vintage, 1969). P. 157.

◀→ AUDIO T101 DISCUSSION OF 18-1/2 MINUTE TAPE-GAP RECOVERY EFFORTS

RELIC HUNTERS: In 2001 NARA initiated a process to test the 18-1/2 minute gap in an attempt to recover erased audio material. Several tests were conducted over a period of two years using highly specialised acoustic technologies. To-date all such tests have failed. In reading through the NARA press releases as they relate to Tape 342, it is clear that the history of the tape is largely a history still waiting to be written and is therefore intimately conjoined with teleological accounts of technological development.[5] Qualified researchers who had access to copies of Tape 342 describe the 18-1/2 minute interval as follows: "At the point of the first erasure, the muffled conversation is suddenly replaced by a bussing noise, presumably the sound of a 60-cycle hum leaking from the power grid as interpreted by a high-grain microphone input circuit. Throughout the gap, the buss occasionally drops in volume, but never is there any discernible speech."[6] The impurity of the tape thus conjures the spectral and oral impurity of the man himself [Nixon was notorious for his foul mouth] and his refusal to explain the silence and fill the void. And yet, what could the decoding of this affective silence give us that will not somehow be less than its evocative potential as it now slumbers—encrypted—in crypted in the archive?

▣→ N101 🕮→ N104 / N105

CURSE OF THE MUMMY: If the rhetorical pledge of NARA is to rescue Tape 342 from its imprisoned state of solitary confinement, Jacques Derrida reminds us that the question of the future must remain open, that the full significance of the tape will not be understood even at the moment that its gag-order is lifted—the moment of its revelation. The historical significance of the 18-1/2 minute tape-gap will always be endlessly deferred as its contextual anchors shift, precluding any definitive account of the Nixon Presidency. Likewise for Walter Benjamin "it is not so much what the dead leave behind as it is what the living end up retrieving."[7]

The task of this text is to conceptually extract Tape 342 from its archival mooring; to remove it from the deathly contagion of *le mal d'archive* and to consider it instead as a something that is "dangerously alive" rather than merely a mute and sickly artefact lying-in-wait for its eventual resuscitation. This strategic gesture acknowledges that Tape 342 already speaks in many complex ways. For in fact the tape is not silent but is resonant with the sounds of clicks and magnetic detritus. The tape noise speaks a language, however not one that is intelligible in terms of cognitive human speech patterns. Nixon's act of 'erasure' rather than destroying the sonic transmissions of the tape radically reinvents the tape, renewing its orality so that it now speaks a kind of machinic glossolalia.

▣→ S108

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[5] See NARA press releases in the GLOSSARY of the thesis.
[6] McNichol, Richard Nixon's Last Secret.
[7] "What Benjamin accents is not the material endurance of things but the variable operations of memory. There is no longer the unproblematic correspondence between a life lived and a life remembered, but the difficult endeavour of remembering and the more general prospect of forgetting." Peter Fritzsche, "The Archive," History & Memory 17.1/2 (2005). P. 15.

HOUSE OF A 1000 CORPSES: "We have in the density of discursive practices, systems that establish statements as events (with their own condition and domain of appearance) and things (with their own possibility and field of use). They are all these systems of statements (whether events or things) that I propose to call *archive*."[8] As a national archive and steward of its nation's heritage, NARA is mandated to implement the rational ordering and classification systems that Michel Foucault analysed with such prescience in *The Order of Things*. Contemporary photographer and cultural critic Allan Sekula in his discussion of early photography's role in corroborating the classification systems of anthropometry takes up the disciplining of the body that Foucault (and Richard Doyle more recently) advance in their discussion of the practice of autopsy. "Not merely the scalpel cuts open the medical body; rhetorical formulations, silent and otherwise, made it possible for the opened body to 'speak'. If the body were to speak out of its silence, it had to be composed, patterned. *It had to be ordered*."[9]

Sekula argues that anthropometry, in developing a visual topology for measuring the body and identifying its predilections towards criminality, "enabled photography to deliver upon its archival promise" as an apparatus capable of revealing truth.[10] However he notes that photography's status as a machine for recording reality required its strategic coupling with the mechanisms of a "bureaucratic-clerical-statistical system of intelligence." The scopic regime of the camera was insufficient for truth-telling on its own accord it had to be linked to a process of "archival rationalisation", a term Sekula develops specifically to address photography's complicity with the ordering systems of the archive. Although the indexicality of the photograph pointed to a world outside the image, a world of facticity, it drew its legitimating resources from a conception of the archive as a space of objective knowledge that had already organised and classified the world. The promise of the archive is a promise to tell the truth, to deliver up the empirical evidence that can substantiate or falsify any number of claims. The question of the 'truth' of Tape 342 is therefore not so much a question of whether Nixon lied, but a question of the archive itself and its ability to 'make good' on its promises.

ZOMBIES IN THE ARCHIVE:

"In the living dead trilogy—*Night of the Living Dead, Dawn of the Dead* (1978), and *Day of the Dead* (1985)—the **zombie** becomes as crucial a metaphor for social relations for Romero as the prostitute for Goddard. *Night*, which David Pirie calls "probably the only truly modernist reading of the vampire myth," has been read variously as a critique of the **Nixonian** "silent majority," of American involvement in **Vietnam**, and of the family under capitalism."[11] [emphasis added]

→ Z101 / V101

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[8] Michel Foucault, The Archaeology of Knowledge, trans. A.M. Sheridan Smith (London: Routledge Classics, 2002). P. 145.
[9] Richard Doyle, Wetwares: Experiments in Postvital Living, Theory out of Bounds, eds. Sandra Buckley, Michael Hardt and Brian Massumi, vol. 24 (Minneapolis: University of Minnesota Press, 2002). P. 64.
[10] See Allan Sekula, "The Body and the Archive," October 39.3 (1986). Pp. 3-64.
[11] Barry Keith Grant, "Taking Back the Night of the Living Dead: George Romero, Feminism, and the Horror Film," The Dread of Difference: Gender and the Horror Film, ed. Barry Keith Grant, Texas Film and Media Studies Series (Austin: University of Texas, 1996). P. 202.

The archive is not, writes Foucault, the repository to which artefacts and documents are consigned in order that "they might settle and collect dust" on the contrary it is a site of regeneration that refuses the inclination towards torpor through the sustained "miracle of potential resurrection". Its logic is that of zombification as dead artefacts are returned to the present to commune amongst the living. The mythic horror of the zombie resides in its capacity for devouring matter and converting it into aberrant new forms of life; the artefact in its newly embryonic state is likewise inclined towards deviance in testifying against its previously authored histories. This is the system of functioning, argues Foucault that generates the momentum of the archive, one that binds the reanimation of the artefact—Tape 342—with the virtuality of the archive itself as a mode of appearance, a form of existence, a system of accumulation, a process of historicity and an act of disappearance.[12]

"The archive is first the law of what can be said, the system that governs the appearance of statements as unique events. But the archive is also that which determines that all these things said do not accumulate endlessly in an amorphous mass. . . The archive is not that which, despite its immediate escape, safeguards the events of the statement, and preserves for future memories, its status as escapee, it is that which at the root of the statement-event, and in that which it embodies it, defines at the outset the *system of its enunciability*."[13]

In *The Archaeology of Knowledge* Foucault rebukes the empirical assertions made by theorists of the archive and stresses that the archive is actually a set of enunciatory practices that defines the limits of what can be said at a given moment, what can be promised and by extension delineates *who* is the authorised subject of speech sanctioned to make such proclamations. The credibility of the archive turns on the authority of its performative utterance as a discriminating mode of articulation. The archive creates the illusion that it is governed by the logic of empiricism, producing accounts that are both accurate and ethical in nature, even though the process of entry into the archive by an artefact is always deliberately selective. Yet the material reality of Tape 342—its objectness—reminds us that the archive is not simply an epistemological apparatus for posthumous acts of enunciation but is, as Derrida reminds us, first and foremost "a literal place, a domicile, an address, and a residence" where real things are housed in real buildings, libraries, and offices.[14] Its situatedness as a site for knowledge production must therefore take into account its ontological dimensions as a space for what actually exists and a time through which things move, only then can the archive author and actualise particular speech acts as contingently legitimate within the delimited space-times out of which the artefact re-emerges. As such the archive always requires its exo-strategic coupling to localised modes of articulation that are historically specific even when it is *history* itself that is being called into question. The archive is, in effect, an engine for time-travel; an event-machine for making and remaking history, for rehabilitating memories and recuperating lost as well as suppressed narratives. And yet as it propels its artefacts forwards into the future it is unable to guarantee the particularities of their emergent speech acts, nor their modes of reception and analysis.

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[12] See Foucault, The Archaeology of Knowledge. P. 146-7.
[13] Foucault, The Archaeology of Knowledge. P. 146.
[14] Thomas Osborne, "The Ordinariness of the Archive," History of the Human Sciences 12.2 (1999). Pp. 51-52.

TOMB RAIDER: The archive as an archaeological enterprise is incapable of recovering the complete memory-traces encoded in its artefacts. It merely gestures towards a temporal fiction that is always-already tainted by the artefact's transit through historical space-time. As such its utterances remain partial, its speech acts "infelicitous" and no amount of carbon dating will ever adequately account for the specificities of its originary articulations. Tape 342 is, in effect, a mediatic fossil, which in the process of our textual exhumation will be revealed as critically unstable, a conceptual and terminal condition that is one of the necessary constitutive forces driving this inquiry. In spite of its duty to police the objects entrusted to its care, one senses that Tape 342 has only ever been placed under temporary house arrest and that NARA is itself inflicted with a kind of "archive fever" a malady that longs for originary truth: the fantasy that one-day technology will be capable of restoring meaning to Tape 342.[15] Although NARA's commitment to probing the magnetic encodings of the tape and unlocking its secrets is tied to its conviction in technology's progressive futurity, the tape as "mute" is already so extensively and discursively networked that the tape-gap exceeds the mere facticity of what any one man can say in 18-1/2 minutes and is therefore a provocation that gestures towards our capacities to control and shape the future.

In her text "Thinking the New" Elisabeth Grosz argues that dominant modes of knowledge formation such as those identified by Foucault in *The Archaeology of Knowledge:* criticism, commentary, categorisation, and disciplinary conformity "are all modes by which the uncontained is woven into a containing network and the new made recognisable and tied to the known."[16] These modes, she argues, are incapable of dealing with the "anarchization of the future", its unpredictability and open-endedness. Taking her cues from Henri Bergson, Grosz stresses that other modes of thinking need to be developed in order to be able to access the temporal vectors of becoming since we can never have direct knowledge of the movement of time nor of the indeterminacy of the future. Only our intuition has access to duration. "At best the intellect reduces duration to spatialisation."[17] While Foucault would concur that the present has a vast range of tactics at its disposal to handle any perturbances that might threaten to disrupt and destabilise existing knowledge systems he always acknowledged the fundamentally provisional nature of these discursive formations.

ARCHIVAL DREAD: Although the archive is by definition a structural mechanism for the spatialisation of data, capable of absorbing all difference through its rigorous procedures of organisation and classification, it too is subject to internal transformation. Grosz has long taken issue with structuralist perceptions of spatiality as less vulnerable to the movement of difference and change than processes of duration. She writes, "just as time is amenable to both flow and discontinuity, so too is space. Space is no more inherently material than duration and is no more the privileged domain of objects than memory is subjective and to be

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[15] Jacques Derrida, Archive Fever: A Freudian Impression, trans. Eric Prenowitz (Chicago: University of Chicago Press, 1995).
[16] Elizabeth Grosz, "Thinking the New: Of Futures yet Unthought," Becomings: Explorations in Time, Memory, and Futures, ed. Elizabeth Grosz (Ithaca: Cornell University Press, 1999). P. 16.
[17] Grosz, "Thinking the New: Of Futures yet Unthought." P. 21.

denied spatial events: each is as amenable as the other to being disconcerted by difference."[18] Even NARA understands that the future of Tape 342 must take into account the role chance will play in the tape's technological and historical revivification. Its ability to endure the entropic pressures of time positions it as a witness to history, entrusted with the complicated task of bringing the past back-to-life in the future, while the inevitable forces of material deterioration—random migration of magnetic particles and machinic decomposition—also offer warning that its testimony may be compromised by its years in solitary confinement. As such any rescue operation is an enterprise predicated entirely upon risk: the risk that the tape may be irrevocably damaged during such invasive forensic procedures and the even greater risk that any recovered speech might actually change our understanding of the past and thus challenge accepted historical narratives. The uncertainty that this intercession by the future heralds is one, in which the tape's potential capacity to rewrite the past and reframe the present is founded upon the very movement of difference that Grosz insists is fundamental to the emergence of the new. "In seeking an open-ended future" one acknowledges "the capacity of any future eruption, any event, any reading, to rewrite, resignify, reframe the present, to accept the role that the accidental, chance, or the undetermined plays in the unfolding of time."[19]

"The archive does not preset an instrumental relation to the world; so although it may have, or have had, many performative functions it is not only and essentially performative. The archive is there to serve memory, to be useful, but its ultimate ends are necessarily indeterminate. It is deposited for many purposes, but one of its potentialities is that it awaits a constituency or public whose limits are of necessity unknown."[20]

ANARCHIVES: Unlike the vernacular and personal archives created by individuals on a more ad-hoc basis to commemorate the non-official subjects of history, the state archive has a vested interest in preserving particular versions of its past, even if it has no a priori insight into how these artefacts will be reconfigured in the future by its users. The symbolic destruction of the archives becomes an affirmation of the articulating authority of the archive to script official histories. One of the enduring images of German reunification is that of East Germans storming the former Stasi (*Stadt Securitat*) headquarters on Berlin's Normannenstrasse on January 15 1990, in an attempt to remove all traces of the secret police files that had turned its punitive gaze and "tentacular network of informers" upon its own citizens.[21] "The sheer scale of Stasi espionage was extraordinary: more than one in every five, mostly male adults in East Germany had links to the Stasi and many more were monitored so that by the end of 1996 more than one million Germans had asked to review their files."[22] Today archivists are meticulously trying to reassemble some forty-five million documents that were shredded by the Stasi in 1989; a mere fraction (5%) of all those destroyed.

→ A205 / A206

[18] Grosz, "Thinking the New: Of Futures yet Unthought." P. 22.
[19] Grosz, "Thinking the New: Of Futures yet Unthought." P. 18.
[20] Osborne, "The Ordinariness of the Archive." P. 55.
[21] See Peter Bradshaw, "How the East Was Lost," The Guardian Friday, April 13 2007.
[22] The Stasi archives are now under the stewardship of the Gauck Authority, the agency created specifically for providing public access to the files. Timothy Garton Ash, The File (New York, 1997), p. 223 cited Peter Fritzsche, "The Archive," History & Memory 17.1/2 (2005). P. 37.

Do contested historical accounts necessitate the dismantling of the archive or can its artefacts, the mnemonic traces of state memory, be coerced into testifying against it? Can the archive become a hostile witness to its own past? In spite of the ransacking of the Stasi archives, many records were in fact saved allowing for their subsequent critical counter-examination and evaluation. Derrida contends [according to Bernard Stiegler] that "the trace cannot bear witness" without a mediating force who can ask it the right or relevant questions: "that we need the work of the historian himself, of his living testimony as it were, in order to constitute a testimony from these traces."[23] The act of mediation, the process that exhorts the testimonial from the trace as a "this-was" brings us back into the present, which is already the future-past of the trace. Although the archive hurls us into the unknown, it acknowledges that even the revolutionary act of overthrowing or destroying the archive cannot return us to the ground zero of history—the blank slate of the past. In the violent erasure of the archive we produce another archive even if the history that is being re-recorded is one of absence and loss. The ultimate promise of the archive is a *promise* to continue making a *promise*. In his book *Archive Fever*, Derrida insists that the question of the archive is not a question of the past:

"It is a question of the future, the question of the future itself, the question of a response, of a promise and of a responsibility for tomorrow. The archive: if we want to know what that will have meant, we will only know in times to come, later on or perhaps never. A spectral messianicity is at work in the concept of the archive and ties it, like religion, like history, like science itself, to a very singular experience of the promise."[24]

CRYPT CLUB: The state archive, consigned with the task of preserving a collective heritage for posterity, scripts national narratives and perhaps more importantly national characters of which Nixon is both an emblematic and paradoxical figure. Although our discussion is specifically concerned with a national body, the organisational template of the archive as a set of legitimating operations is also instrumentalised when staged within more vernacular contexts. The archive extends its symbolic reach in authorising particular subjects and memories to stand in as historical evidence even when activated in the form of a counter-archive. One such provocative example is the ongoing archival project *Unidentified Vietnam* (2003-present) produced by artists Lin+ Lam who have been working with an anonymous collection of South Vietnamese propaganda films in the collection of the US Library of Congress.

→ V206 → V207

This project is directed towards raising questions as to why the entry of some political objects into the "crypt club" of the archive is perceived as deserving of scrupulous attention while others, if they enter into the archive at all, arrive in a much more haphazard and random fashion to rely almost entirely upon the future interests of researchers and artists to do the necessary detective [archival] work. According to the Library of Congress it's basically a

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[23] Bernard Stiegler summing up one of Jacques Derrida's points in "Phonographies: Meaning—From Heritage to Horizon," in Jacques Derrida and Bernard Stiegler, Echographies of Television: Filmed Interviews, trans. Jennifer Bajorek (Cambridge: Polity Press, 2005). P. 100.
[24] Derrida, Archive Fever: A Freudian Impression. P. 36.

question of "national priority", which is of course always linked directly to the allocation of funds and that which is "of interest" at a given moment. (*See discussion in the Introduction: A Question of Interest.*) Vietnam has literally been relegated to the domain of "history" toppled by other political events, not seemingly worthy of the same meticulous considerations that Lin + Lam bring to their particular project of excavation. But as Derrida cautions in as much as we need a "politics of memory" are we going to "delegate this responsibility to a so-called state institution, that is to say, to a system of powers which in fact always represents, in the name of the state".[25] How do we create alternate archives and provide equal and available access so that the necessary work can be done and knowledges transmitted without a level of state intervention?

"Whoever is in a position to access this past or use the archive should know correctly that there was *a* politics of memory, *a particular politics*, that this politics is in transformation, and that is a *politics*. We must awaken to critical vigilance with regard to the politics of memory: we must practice a politics of memory, and, simultaneously, in the same movement, a critique of the politics of memory. *In other words, we must develop an awareness of selectivity. . .*"[26]

TOMB HACKERS: For the artists Lin + Lam, the repository of unidentified and mislabelled spools of 16-mm. film offers an unexpected bounty and opportunity to enter into the archive under the covert operations of art with the intentions of creatively intervening to unsettle and redirect its archival concepts and practices. Theirs is a project and a practice of repoliticising memory (the artefactual traces of American military intervention into South Vietnam) that reminds us of the need to remain vigilant and sceptical when confronted with the archive. However in order to produce this series of tactical manoeuvres, which in their very nature is oppositional, the artists must ultimately rely upon the signifying dimension of the archive as a formal device for making history. The very subversion of the archive is an act of reciprocal recognition that acknowledges its implicit power to narrativize objects and events. Nietzsche in his critique on the faculty of knowledge asked "How should a tool be able to criticize itself when it can only use itself for the critique?"[27]

In response we might argue that the archive generally speaking, is a form of preemptive technology that organises its categories in advance of the selective entry of any given object; that the future significance of the artefact has already been delimited by the specific politics of the day. Clearly NARA's archival commitment to Tape 342 is largely indebted to just such a preemptive process, in that Nixon's culpability as registered on tape—spoken in his own words—is already a de facto foregone conclusion, which any future tape recovery will merely substantiate. It is this conviction that fuels the drive to archive the tape and ensures that it remains an object "of interest" more so than any other potential speculative outcomes on NARA's part. But as Foucault has pointed out and as Lin + Lam's project highlights, archival encasement is not a limit condition. Tethered to the end of the "umbilicus" that writes us, as Derrida would say, into the archives of history and attaches us to "the paternal belly of the

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[25] Derrida and Stiegler, Echographies of Television: Filmed Interviews. Pp. 62-63.
[26] Derrida and Stiegler, Echographies of Television: Filmed Interviews. P. 63.
[27] Friedrich Nietzsche, The Will to Power, trans. Stuart Kaufmann, New York (Vintage Books: 1968). P. 486.

State" are not infallible inscription and data-entry machines, dangling like 21st century ballpoint pens on a chain, but archivists and accession policies: people who make decisions, both informed and rash, who make judgements and blunders, who are themselves understaffed, underfunded, and overworked.[28] Boxes come and go, documents are catalogued and archived, but also deaccessioned and shredded. Sometimes things go missing, get misplaced and misfiled only to resurface in some other configuration. And sometimes they simply just vanish into thin air.

📖→ O101 💬→ O104 ▣→ O102 / O103

BACK TO THE FUTURE: However to think archival preemption along the lines that Brian Massumi maps out, as a recursive process that "induces" the event, would align it more closely with the kinds of projects advanced by Lin + Lam who overlay their archives onto those of the official state record thus producing a feedback loop between the past and present. This adapted-archive is a preemptive technology only to the extent that it welcomes eruptions from the future as per Foucault's formulation. For Lin + Lam it does not act in the name of the past to shape the present and control the contours of the future as conventionally understood, but acts in order to bring about different understandings and variable relations between events and temporalities. More accurately their artwork makes a preemptive argument that suggests that interest in South Vietnam is in fact already fully-present but simply does not register at all levels in the same way. The date of their artwork as 2003+ takes into account the coming of future events and recognizes that other interests will inevitably come forward, which will modulate their own counter-archive in turn. *(See Glossary entry Preemption.)*

MUMMIES VS. ZOMBIES: Antoinette Burton author of *Dwelling in the Archive* contends that, "debates about history versus truth, fact versus fiction, empiricism versus theory are all corollaries of [the] contretemps over the archive" and that we need to "be cognisant of its horizons, wary of its distortions, sceptical of its truth claims and critical of its collaborations with state apparatuses."[29] Her position echoes an entry made by Raymond Williams in his keyword citation on the transactional nature of tradition as an always deliberately selective process ratified between self-interested parties.

"Tradition is not to be to be understood as merely the surviving past, worthy of record and respect because its value has been proved by time. What is presented as 'tradition' is in fact always selective: **an intentionally selective version of a shaping past and a preshaped present** which is powerfully operative in the process of social and cultural definitions and identifications. The selective tradition becomes a powerful force in sustaining the interests of the dominant class, race or gender. Tradition is in practice the most evident expression of the dominant and hegemonic pressures and limits."[30] [emphasis added]

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[28] Loosely requoted from Jacques Derrida, Ear of the Other: Otobiography, Transference, Translation (Lincoln: University of Nebraska Press, 1988). P. 36.
[29] Antoinette Burton, Dwelling in the Archive: Women Writing House, Home and History in Late Colonial India (New York: Oxford University Press, 2003). Pp. 138-140.
[30] Raymond Williams, Keywords: A Vocabulary of Culture and Society (Oxford: Oxford University Press, 1985).

Burton argues that: "all archives are provincial, interested, calcified in both deliberate and unintentional ways; that all archives are in the end fundamentally unreliable."[31] While Foucault's reading of the archive insists that its tendency towards revivification—the zombification of its artefacts—is precisely that which constitutes its inherent vitality; a dynamism he locates within the very condition of unreliability that Burton finds problematic. The calcified fossil invoked by Burton is that which can only speak about a particular moment in time, it is merely "change mummified", whereas the fossil conceived as "radioactive" speaks through time, its "stasis zombified" by the instability of the archive.[32] Foucault writes: "Far from being that which unifies everything said in the great confused murmur of a discourse, far from being only that which ensures that we exist in the midst of preserved discourse, it is that which differentiates discourses in their multiple existence and specifies them in their own duration."[33]

→ F201 RADIOACTIVE FOSSIL

What we seem to be faced with is two different modalities of the archive that are produced simultaneously yet function at different scales. One its meta-expression as an authoring device for producing histories and determining questions of relevance with regards to its classificatory regime and the ordering of its artefacts. This is the archival system that Burton is concerned with. And two, its implicit articulations of uncertainty governed by the possibility that its own records may eventually betray the very history they were set up to preserve and consign to future generations. This is the archive that Foucault and by extension I am interested in. As Werner Heisenberg has already taught us, we can never have complete knowledge of the initial state of a system to allow for any predictive accuracy over time and therefore we should rather concern ourselves with the production of "novel facts" or as Isabelle Stengers might say "propositional fictions". To scale-up from the quantum realm and attach the uncertainty principle to the operations of the archive isn't a work of mere metaphor if we consider that uncertainty, chance, and indeterminacy are the very conditions that govern the emergence of all matter. Which is to say, that surely the archive as a complex macrosystem can't achieve the absolute stability and degree of certainty that eludes much more basic matter. Each ordering system, each archive produces a set of singularities that are specific to its own temporal unfolding and "govern the appearance of its statements as unique events."[34] The truth claims made by the archives and the credibility of its statements are entirely dependent upon the particularities of the context in which they are made-to-speak. The archive is always a singular expression of a set of localised interests. Its implicitly contingent nature thus allows for the possible redistribution of its artefacts and the scripting of alternate histories despite the vigilance of its archivist gatekeepers. This latent instability subverts the reliability of its speech acts, encouraging critical interventions [on the part of this thesis for example] into the archive that in turn permit us to reactivate Tape 342's virtual registers and bring its heterogeneous enunciatory capacities back to life.

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[31] Burton, Dwelling in the Archive: Women Writing House, Home and History in Late Colonial India. P. 26.
[32] Steve Reinke, Folk & Still (2005). P. 2.
[33] Foucault, The Archaeology of Knowledge. P. 146.
[34] Foucault, The Archaeology of Knowledge. P. 145.

CROOKED TALES: On November 17 1973 in an hour-long televised interview with more than 400 Associated Press editors lobbing questions, Nixon denied any wrong doing in the Watergate case making the infamous declaration—I'm not a crook. "I have earned every cent. And in all of my years in public life I have never obstructed justice. People have got to know whether or not their president is a crook. Well, I'm not a crook."

◀→ AUDIO D102 I'M NOT A CROOK

Not only does the vast archive of tape recordings tell tales to the contrary, exposing corruption and crime in the FBI, CIA, and Pentagon, but Nixon himself soon had to repay $432,787.13 in back taxes plus interest after an investigation by the Internal Revenue Service and a congressional committee. Ultimately whether or not Tape 342 will corroborate Nixon's criminality is not my abiding concern here, but nor am I trying to vindicate Nixon in suggesting that, because the speech-acts of archives and their artefacts are by their very nature subjective and unreliable, by extension his guilt must also be called into doubt. Clearly there is more than enough evidence to be able to declare the "case closed" in this latter regard. What the gap in the tape offers is an opportunity to think a series of questions around the functioning of the archive as a machine for making history and the ways in which its artefactual transmissions can actualise other versions of events to draft a series of "propositional fictions" that may trouble what we have come to accept as a definitive account. Tape 342 is in essence a nexus that can both transmit and cut flows between domains of knowledge production and as such allows me to tackle and consequently entangle a wide range of problematics that are political, metaphysical, social, and technical in their orientation, only a few of which I am able to address herein.

DAWN OF THE DEAD: Contemporary media systems, according to Stiegler (and the late Jean Baudrillard), anticipate an event occurring to the extent that they actually pre-determine and pre-programme it. In a conversation with Derrida in *Echographies of Television*, Stiegler suggests that the modern modalities of archivization facilitated by technologies of exact recording such as photography and phonography create new channels for accessing the past (visual and aural) that bring about new relations to the future. The fact that we have technologies of precise temporal recording at the ready, inscribes, according to Stiegler, "the statement "No Future" all over the place." [35] By this he means that these media machines nullify our anticipation of the coming event to the extent that it seems to have already happened. Rather than take us by surprise, we have already prepared the ground for the event's arrival, knowing when its going to occur, where it is going to happen, and what form it will take. Our camcorders are on standby—it's just a question of time. . .

"[I]f it is furthermore true that the new modalities of archivization are modalities of recording that one could say are more, in a sense, more exact, the paradox would stem from the fact that, without meaning to privilege the Western relation to the future—which has been history as acceleration, intensification, multiplication, and as it were expansion of the possibilities for the future—the current development of exactitude is inscribing the statement "No future" all over the place."[36]

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[35] Derrida and Stiegler, Echographies of Television: Filmed Interviews. P. 104.
[36] "Phonographies: Meaning—From Heritage to Horizon," in Derrida and Stiegler, Echographies of Television: Filmed Interviews. P. 104.

Derrida contests Stiegler's argument that the exactitude of these recording technologies counteracts temporal erosion and cancels out the future, by suggesting that we didn't have to wait for the invention of new machines to have this kind of experience. It's rather the powerful intensification of anticipation that such technologies produce in us that creates the double bind of "we're ahead and we're behind." "The impression that the horizon [of the future] is closed" he suggests, may well be a "sign of the power of archivization" rather than an effect of recording machines. Moreover, the idea of "no future" produces an incredible sense of anxiety in the present, in that the future is everywhere, all around us in its infinite variability and guises. Presentness is therefore endlessly deferred as it slips into the future-anterior. Although Gilles Deleuze's understanding of temporality (to oversimplify) is generally prospective inclined towards a futurology and Derrida's retrospective, a hauntology focused upon writing the archive, this conversation seems to align the two thinkers with respect to an ontology of time in which the present is merely a contracted form of the future-past. We live, says Deleuze, in a "limited present" that is encased by the relative conjunctions between the future and the past, and only the divine, that which exists outside of earthly time, can experience presentness in all its fullness as an extensive duration. "God experiences as present that which for me is future or past, since I live inside more limited presents. Chronos is an encasement, a coiling up of relative presents, with God as the extreme circle or the external envelope."[37] Likewise for Heidegger it is only the metric organisation of the clock that can show us the now "but no clock ever shows the future or has ever shown us the past."[38] Conceptual artist Ian Carr-Harris made explicit this paradox in a performance in which he repeated the word "now" over and over again in a futile effort to capture the "now" that endlessly eluded him. If the future is always-already here, has already happened, then it is as if we are already dead suggests Derrida, already entombed within the archive—already in mourning. The future-anterior stakes out the present and consigns us to the double experience of both anticipation and mourning. The scrapbook, the photo album, the film and video footage of our family are all souvenirs pointing to a past-life; they are the evidentiary witnesses that in exceeding our own temporal duration signify our passing. The drive to archive merely amortises our mortality.

"Anticipation opens to the future, but at the same time neutralises it. It reduces, presentifies, transforms into memory [*en mémoire*], into the future anterior and, therefore, into a memory [en souvenir], that which announce tomorrow as still to come. A single movement extends the opening of the future, and by the same token, by way of what I would call a horizon effect, it closes the future off, giving us the impression that "this has already happened. I'm so ready to welcome the new, which I know I'm going to be able to keep, capture, archive, that it's as if it had already happened and as if nothing will ever happen again. And so the impression of "No future" is paradoxically linked to *a* greater opening, to an indetermination, to a wide-openness, even to a chaos, a chasm: anything at all can happen, but it has happened already."[39]

THE MUMMY RETURNS: These technologies of exactitude invoked by Stiegler (and to a lesser degree by Derrida) are in fact rhetorical machines, which inscribe reality effects through their discursive interpellation or what Mark Hansen calls technesis (the putting into discourse

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[37] See his two readings of time in the chapter "Twenty-Third Series of the Aiion" in Gilles Deleuze, The Logic of Sense, trans. Mark Lester, ed. Constantin V. Boundas (New York: Columbia University Press, 1990). PP. 162-8.
[38] Martin Heidegger, The Concept of Time, trans. William McNeill (Oxford: Blackwell, 1992). P. 17E.
[39] Derrida and Stiegler, Echographies of Television: Filmed Interviews. P. 105-6.

of technology's robust materiality). In "Plato's Pharmacy" (*Dissemination*) Derrida discusses the ancient Greeks' condemnation of the imitative arts of poetry and painting, as forms of recording that are impotent to answer for themselves. Socrates in comparing a piece of writing (graphema) to a painting (zographema) states these arts "stand before us as though they were alive, but if you question them they maintain a majestic silence."[40] The Platonic critique of mnemonic technologies would argue that Tape 342 could never speak for itself, that is, testify on its own accord. The tape can only be rewound and played back again. It can only ever say the same thing over and over again. The recorded voice (as opposed to speech) is not the animated repetition of the living but a sonic replicant that renders the trace of the living other to itself.

Derrida's fundamental thesis argues that writing [recording] is not a simple supplement to speech but that writing yields language. An idea that is surprisingly resonant with Alfred North Whitehead's concept of "prehensions".[41] Because the voice has a relationship of immediate proximity with the mind, Greek philosophic thought has historically linked truth to the speaking subject—a metaphysics of presence refused by Derrida. All acts of inscription, he contends including cinematography, choreography, photography, musical notation etc. come before speech. "What opens meaning and language is writing as the disappearance of natural presence."[42] In a Derridaian détournement the machine asserts its inscriptive agency as its capacity for recording comes prior to the speech-acts that will activate it mechanical membranes. The potentiality for recording comes before speaking. As such the 18-1/2 minute tape-gap is both a prehension of Nixon's [incriminatory] speech as well as the datum or archive in which his eventual downfall was to be written. The artefact comes before the archive and stakes it claim on history.

DEMON LOVER: To suffer from archive fever: "It is to burn with a passion. It is never to rest. . . It is to have a compulsive, repetitive, and nostalgic desire for the archive, an irrepressible desire to return to the origin, a homesickness, a nostalgia for the return to the most archaic place of absolute commencement."[43] The archive is also a "paradoxical place of dreams" where fantasies of time-travel intertwine with the archaeological quest of discovery.[44] This archival delirium exerts an overwhelming urge to restore speech to recovered objects, to recast history

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[40] Socrates speaking to Phaedrus cited by Jacques Derrida, Dissemination, trans. Barbara Johnson (London: Continuum, 2004). P. 137.

[41] For Whitehead objects and elements are given to us in the experience of prehending. This process of prehension is a kind appropriation that brings objects into the worldhood the subject where they coexist as relative but no longer separable terms or entities. And although the prehending subject is transformed by the objects it takes in, these elements are already there, prior to their being seized upon and incorporated by the subject. In short they are antecedent to their being prehended. For example light and sound anticipate the eye and ear—they prehend the subject's necessary grasp of them for the purposes of vision and hearing. "I use the term 'prehension' for the general way in which the occasion of experience can include, as part of its own essence, any other entity, whether another occasion of experience or an entity of another type. This term is devoid of suggestion either of consciousness or of representative perception." Alfred North Whitehead, Adventures of Ideas (Free Press 1933 (reprint) [1967], 1967). P. 234.

[42] Jacques Derrida, Of Grammatology, trans. Gayatri Chakravorty Spivak (Baltimore: The John Hopkins University Press, 1976). P. 159.

[43] Derrida, Archive Fever: A Freudian Impression. P. 91

[44] Carolyn Steedman develops the concept of the archive as a place of dreams in Carolyn Steedman, Dust: The Archive and Cultural History (New Brunswick: Rutgers University Press, 2002). And in Carolyn Steedman, "The Space of Memory: In an Archive," History of the Human Sciences 11.4 (1998).

anew, all the while knowing that such speech acts will only ever be fleeting. The artefact provides more than a documentary record; it transforms itself into a "recording device" for repairing incomplete memories traces, advancing other histories and drafting speculative fictions.[45] As such the 18-1/2 minute tape-gap is a recorded event that becomes itself a recording device for producing yet another recording.

The Legend of the Chamber

PRESS RECORD. The unalterable status of the recording as producing a mute likeness that is unable to answer back, that can never say more than that which is already inscribed on tape is countered by an understanding of how sound recording devices actually work. While the digital may be able to produce exact copies of a file in perpetuity, no technology is itself able to produce an exact copy of an event that occurred in the real world. We merely suspend our disbelief and edit out those incidents or noise that interfere with our experience of mimetic authenticity. Roland Barthes called this a "reality effect". Although the recording can never guarantee the authenticity of what is captured, it is able to "elicit *an* authentification effect for the person who looks" at the photograph or listens to the tape, bestowing a sensation of this-actually-was. This perceptual contract between the recording and live event locates the receptor-body within a volumetric space and temporal duration that is specific to the playback conditions of the recording whether this is on-line, in an archive, courtroom, art gallery or elsewhere. Each mode of reception superimposes an additional track onto the recorded event (visual or auditory) that is able to trigger different experiential registers and plot different narrative trajectories for the same event.

SOUNDS OF SILENCE: Musicologist Rich Altman stresses that variations in the spatial positioning of the hearing ear can script different acoustic accounts of the same recorded event, so that what the recording actually consists of is not the sound-event per se but a recording or "record of a particular kind of hearing."[46] Even at the moment that the recording is made extraneous information has already combined with the recording process (ambient environmental elements and/or technical aspects relating to the apparatus) creating a heterogeneous acoustic materiality. No microphone, says Altman, produces a faithful sound recording but always carries some trace of the recoding process overlaid onto the sound-event. Certainly the poor quality lavalier microphones used by Nixon in his recordings are a case in point. "Far from arresting and innocently capturing a particular narrative, the recording process simply extends and complicates that narrative."[47] Even if we could recover the 18-1/2 minutes of erased audio material on the Nixon tape, its faithfulness to the originary sound-event would be entirely conditional, producing at best a partial narrative—a partial voice-print. Every recorded sound is recorded at least twice over; first by the specific circumstances of its

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[45] See Mike Featherstone, "Archive," Theory, Culture & Society 23.2/3 (2006). P. 594.
[46] See Rick Altman, "The Material Heterogeneity of Recorded Sound," Sound Theory Sound Practice (New York: Routledge, 1992). Pp. 24-26.
[47] Altman, "The Material Heterogeneity of Recorded Sound." P.24.

recording and then again by the particularities of its reproduction and the vagaries of the playback situation. The recorded event performs a kind of double-take that constitutes it as both more and "other" than the original. In transforming itself, the tape exceeds itself, offering up a sonic plenitude that surely repudiates any accusations of "impotency". Contrary to the Platonic critique of mimesis, the recording doesn't preserve its stubborn silence through its contracted state of resemblance to an originary incident but returns the recorded event to the reader/listener as an multi-lingual object that can speak through time.

REWIND BACK TO 1973. Changing definitions of silence were central to shaping both the public perception of Watergate and the ways in which the prosecution developed their arguments. During the initial stages of the Watergate investigation, the existence of the White House taping system was not known and therefore Nixon's refusal to speak on the grounds that his testimony might incriminate him (a right afforded him by executive privilege) marked his body as the initial locus of silence. When the discovery of the White House taping system was made public in 1973 during hearings before the Senate Watergate committee and with it the existence the vast tape archive, the US Circuit Court of Appeals in Washington ruled that Nixon must turn over the tapes to presiding Judge John Sirica, an order he refused to comply with. Instead Nixon countered with an offer to provide edited transcripts of the tapes. As public criticism mounted, including calls for his impeachment, Nixon eventually relented and agreed to surrender the missing tapes, although the White House always claimed that certain tapes subject to the subpoena did not actually exist.[48]

SILENCE AS SOUND: Silence consequently shifted from the aphasiatic body of the President to the absence of the subpoenaed tapes and upon their recovery to the 18-1/2 minute gap in Tape 342 itself. Through this process of juridical displacement, silence was reconfigured as the very means by which material artefacts could begin to speak for themselves. Although Nixon would continue to maintain his resolute silence the tapes could now testify in his place. Once silence was relocated to the tapes, Nixon's live testimony became largely irrelevant, as he was already officially on-the-record so to speak. The series of clicking noises distributed throughout the 18-1/2 minute tape-gap offered circumstantial evidence that a process of clumsy erasure had occurred raising the possibility that this machined silence was the consequence of a deliberate act. Controlling the discourse around silence proved to be a decisive strategy in turning the tide against Nixon in favour of the opposition. However the 18-1/2 minute tape-gap is still regarded as the one crucial piece of missing evidence that could render an unequivocal verdict.

◀→ AUDIO S202 18-1/2 MINUTE TAPE-GAPE IN TAPE 342

Throughout John Cage's extensive writings on silence, particularly after his legendary visit to the anechoic chamber at Harvard University, he insists upon the impossibility of complete silence. As the story goes, Cage was perplexed to hear two sounds in the anechoic chamber, which by definition as a vacuum should have been soundless. When he queried this residual

[48] Paraphrased from Anon., The Battle for the Tapes.

sound, he learned that he was in fact hearing the interior sounds of his own body, "the low throbbing of his blood circulating, and the high-pitched sound of his nervous system".[49] Cage thus conceptualised silence as "always-sound", a state of sonic contingency that is no longer attached to specific enunciatory acts, such as his famous silent piano performance 4'33" but is a continuous unfolding that "resonates from each and every atom".[50] Douglas Kahn in his writings on Cagean silence suggests that the crucial experience of the anechoic chamber inaugurated a fundamental shift in Cage's thinking as "all-sound" was conceptually joined to "always-sound" by way a rhetorical manoeuvre that was contracted to an understanding of technology's capacity for turning the body inside out, permitting us to observe its internal functions as if at a distance. Cage used "the [rhetorical] promise of technology to extend *all sound* and *always-sound* outside the operations of his body to hear the vibrations of matter."[51] This now historic incident forwards a new kind of self-surveillance, an intensive diagnostic regime that allows us to eavesdrop on the covert chatterings of our own body, to externalise its subterranean cytological transmissions as if they were located within a body-double.

"Within each object, of course a lively molecular process is in operation. But if we are to hear it, we must isolate the object in a special chamber."[52]

Cage was convinced that if we deployed the appropriate technology we would be able to discern the acoustic resonances of matter at the subatomic level, recording the particulate vibrations of protons, electrons, and neurons within atoms. His conceptual project to "interpolate sound back onto the seeming intransigent silence of objects" is supported by the physics of quantum mechanics in that all subatomic particles actually have wave properties including those of frequency (rate of vibration) and wavelength (distance between successive wave crests).[53] "If all silence was actually sound than all matter too must be audible, given the proper technology to detect soundful activities at the level of subatomic vibrations. Matter is dissolved as technology denies inaudibility and forbids silence"[54] Cage's singular contribution was to overturn the dualism that opposed silence to sound and replace it with a sonic continuum that included all possible sounds including those microsounds that exist beyond the frequency range of human hearing. His theorisations of silence "as all sounds which we don't intend" links his work of this period to the concurrent developments in information theory advanced by Claude Shannon in 1948 which overturned a similar opposition between noise and information.

→ **S201**

SIGNALS FROM BEYOND: For each possible state in the transmission of a signal there will be a set of probabilities that assign it relative degrees of entropy. According to Shannon's theory, there is an entropic condition for the signal's source, its input and output channels as well as

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[49] Douglas Kahn, "John Cage: Silence and Silencing," Noise Water Meat: A History of Sound in the Arts, ed. Douglas Kahn (Cambridge: MIT Press, 1999). P. 158.
[50] Kahn, "John Cage: Silence and Silencing." P. 159.
[51] Kahn, "John Cage: Silence and Silencing." P. 159.
[52] John Cage, "The Future of Music," Empty Words (Middletown: Wesleyan University Press, 1979). P. 179.
[53] Douglas Kahn, "John Cage: Silence and Silencing," Noise Water Meat: A History of Sound in the Arts, ed. Douglas Kahn (Cambridge: The MIT Press, 1999). P. 164.
[54] Kahn, "John Cage: Silence and Silencing." P. 164.

its noise quotient. Entropy can no longer be equated exclusively with noise as it was in the formulations of his contemporary Norbert Wiener, but must be conceived as a dynamic dimension of all facets of signal relay. Rather than being detrimental to the flow of information within a system, noise is now regarded as an essential condition for the emergence of legibility and pattern. Likewise Jacques Attali contends that noise doesn't exist in itself but only in relation to the system within which it is inscribed (emitter, transmitter, receiver). Governed by operations of difference, intelligibility sets itself against the backdrop of disorder or non-pattern as its *very* constitutive force. Noise creates new meanings. Shannon's ideas forwarded a positive understanding of noise as amplified information, a kind of always-noise that finds its expressive corollary in Cage's notion of always-sound. If noise becomes information and silence becomes sound, then the 18-1/2 minute transmission of micro-signals (clicks and hisses) must be rethought according to these new perceptual thresholds. Furthermore, the special chamber referred to by Cage may be transposed to NARA itself, in that, the archive provides the background noise, the 3,700 hours of audio recordings produced by Nixon, against which the singularity of Tape 342 and its 18-1/2 minutes of silence may be discerned.

It Came From Inner Space

ERASE? However the act of erasure, like the concept of silence, is a technical misnomer that is immediately refused through an empirical investigation of the tape recorder itself, which alas reveals only six buttons: PLAY, STOP, PAUSE, REWIND, FAST-FORWARD, and RECORD.[55] The most important button is missing. But not only is it missing, it has in fact never even existed. The ERASE button is a mechanical delusion for perpetuating the logic of repression.

The technical organisation of an analogue tape recorder *does* consist of something called an erase head over which the tape passes each time the record button is activated. Erasing is only ever achieved as an abstraction, a by-product that the act of recording sets into motion only to turn around and negate. Immediately upon passing over the erase head, the tape glides over the record head, which reassembles its electro-magnetic particles and reinscribes it with a kind of soundless sound. The alternating positive and negative fields emitted by the erase head reformat the tape so that minimal electronic bleed is archived by the substrate. An effective erase head in reducing the signal by at least 60 dB can achieve minimal telegraphy of noise. Only a bulk-eraser where the reel of tape is immersed in and withdrawn from the field of a large AC magnet operated at the frequency level of a high-voltage power line can actually eliminate almost all extent tape noise. In short, it is virtually impossible to erase an analogue tape, only the digital allows for the deletion of a track but even then deep-data recovery is still possible.

→ U101

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[55] The Uher 5000 tape recorder used by Rose Mary Woods in transcribing Nixon's audio recordings does have an additional "Diction" button but the SONY TC-800B used by Nixon to record had the usual 5 buttons.

Although Tape 342 was recorded on a SONY TC-800B, it was determined by the Advisory Panel to Judge Sirica in 1974, that a UHER 5000 was the machine that actually erased or re-recorded the 18-1/2 minute portion of Tape 342. This machinic deterritorialisation increases the likelihood of conserving latent vocalisations. "A crack in the erase head, a dust mote on the tape or heads, slack in the tape at start-up, head misalignment" would also have severely compromised the erase head's effectiveness.[56] Archival conservation of Tape 342 has focused on maintaining its overall stability and in particular on preserving the integrity of the remaining iron oxide particles that are distributed along the length of the 18-1/2 minute 'silent' segment of the tape. Because the magnetic layer of a tape is extremely fragile it is bonded to a smooth plastic substrate that provides it with tensile strength and flexibility so that it can conform to the tape heads of a variety of machines. During the recording process the tape travels across the record head of the machine where a small gap interrupts the magnetic circuit of the head (made up of a high permeability core and signal coil). As the current passes through the signal coil it concentrates its electrical field at the small gap over which the tape is moving. "The signal changes in amplitude from one instant to the next, so that each element of the tape as it passes the gap "sees" and remembers a different amplitude and polarity of magnetisation, becoming magnetised in a pattern."[57] After recording, the tape's surface is marked by areas of discrete magnetisation of varying depth and direction that can now be converted into electrical waves [sound] by a playback system.

Determining the tape speed of the recording is normally governed by qualitative considerations which take into account the density of the material, its bits or wavelengths per mm. Nixon's decision to run his machine at less than its optimal setting (15/16 IPS—or half the standard rate) increased the available recording time of the tape but decreased its audio fidelity. This incongruity may prove a useful factor in the tape's restoration although the already degraded quality of the original voice recordings could further obfuscate the intelligibility of any recovered data. Analogue audio recorders such as the SONY TC-800B reel-to-reel voice recorder must drive the tape at a steady speed with short-term variations of not more than 25% in order to produce coherent voice recordings. A precision roller called a capstan is used to smooth out irregularities deriving from the mechanical workings of the recorder (rollers, belts, gears, motors, reels) as the tape winds its way through the machine. Apparently less precision is acceptable in low-cost recorders such as that used by Nixon, but any unsteadiness in the capstan process will result in fluctuations: a phenomena called "wow and flutter" which superimposes additional sounds into the recording process, thereby extending the point already made by Altman. Another important dimension that affects the quality of any analogue recording is that of AC or high-frequency biasing, a technique for removing distortion. High-frequency biasing introduces residual or additional magnetisation into the recording process, superimposing positive and negative charges between the tape's passage from erase to record heads, which in turn cancel out errant signal peaks leaving the tape in a stable neutral

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[56] Paul Ginsberg quoted by McNichol, Richard Nixon's Last Secret. P. 3
[57] Marvin Camras, Magnetic Recording Handbook (New York: Van Nostrand Reinhold Company, 1988). Pp. 37-38.

condition.[58] These mechanical considerations are all sites of technical potential that involve the introduction of supplemental or extraneous noise into the recording process and as such will likely complicate NARA's salvage operations. At the same time they open up possibilities for the tape to activate other virtual registers. The initial sound-event of the tape is signified by Nixon's original 1972 voice recording, whereas the concept of always-sound or gradient sound, is represented by the mechanical processes of recording (tape speed, wow & flutter, capstan precision, high-frequency biasing) each of which has inscribed superfluous acoustic information into the magnetised recording media. All of NARA's efforts at decoding the tape have focused their forensic attentions on recuperating the former, the sound-event, while the presence of always-sound, the speech of the machine itself has been largely ignored, relegated to the ignominy of noise, interference, something to be eliminated rather than ministered to in its own right.

Raiders of the Lost Archive

One proposed strategy for recuperating the missing audio involves the use of filters for discerning potential speech fragments and tones. If aperiodic signals can be detected within the 18-1/2 minute tape-gap they may indicate that a word or a sound occurred in that frequency. Once a word or a partial voice-print has been extracted then it is possible to measure its frequency characteristics and search for the same properties elsewhere.[59] "From a machinic point of view (or hearing) there's no difference between voice and noise, we have only sonic stratum and various means to manipulate that sound matter."[60]

When a tape is erased, the erase head scatters its magnetic particles, scrambling its contents. This phenomenon doesn't remove particles but radically reorients them through demagnetisation. The original recorded voice still clings to the tape but is ventriloquised by its machinic deterritorialisation as the presentness of absence. The more the tape is rewound and replayed, the more mobile or animated its particles become. In their temporal drifting across of the surface of the tape they produce a kind of latent noise or acoustic interference. But this should not be viewed negatively as an act of magnetic subterfuge, but rather, as one of the means that the machine has at its disposal to create new sounds and 'meanings'. The very absence of meaning in pure noise (which we now understand as always-information) says Attali frees the listener's imagination because it unchannels auditory sensations. The absence of meaning is thus the presence of all possible meanings because it creates an open field for

[58] "When high-frequency bias is used, the record is first demagnetised with an erasing head, which subjects it to an alternating field that diminishes to zero over many cycles. The record then passes through a recording head energised by a mixture of the signal to be recorded and a steady high-frequency, high-intensity current. For audio recorders, the high-frequency component may be 30 to 400 kHz, and its intensity is usually about five to ten times as high as the average recording current. The resultant is not amplitude modulated signal but merely a mixture of high-and-low frequency fields. When the record medium is passed through the composite field, it acquires a residual magnetisation according to the output versus input curve, which is linear and symmetrical. The bias is not recorded since its high frequency is beyond the capability of the system."
Camras, Magnetic Recording Handbook. P. 45.
[59] McNichol, Richard Nixon's Last Secret. P.4.
[60] Janne Vanhanen, Loving the Ghost in the Machine: Aesthetics of Interruption, 2001, ctheory, Available: http://www.ctheory.net/ articles.aspx?id=312, Nov. 28 2005. P. 2.

exploration. The concern for the fragility of Tape 342 and recovery of its latent speech acts has of necessity limited the number of times it has been played back. To-date proposed restoration techniques have relied upon methods of digital enhancement that still require the tape's actual transit through the mechanical components of the machine. This physical encounter between artefact and apparatus is highly problematic for NARA, as each playback of the tape alters the relative location of its remaining metallic particles ever so slightly. Repetition engenders transformation, in that it continually remakes the tape in the present.

SOUND GHOSTS: Janne Vanhanen writes that repetition "multiplies the same element over and over again, juxtaposes the element with its each successive re-emergence, brings out the differences by bringing out the gaps between singular repetitions, [and] forms a machinic assemblage out of the circulation of sound blocks. The audibility of these juxtapositions is a textuality of differences and differences mark out the repetitions."[61] But repetition is also form of returning that conjures forth sound-ghosts, a memory effect of magnetic recording in which the imprint of a previous recording mysteriously reappears. "Ghosts in machines always appear as malfunctions, glitches, interruptions in the normal flow of things. Something unexpected appears seemingly out of nothing and from nowhere. Through a malfunction, a glitch, we get a fleeting glimpse of an alien intelligence at work."[62] This effect was first reported in 1947 when two new kinds of tapes were introduced with varying degrees of coercivity (resistance to demagnetisation) but also results from errant microns located at the edge of a recorded track which have escaped full erasure and haunt subsequent recordings. The latter phenomena, also known as hysteresis (remanence), are what Vanhanen has called the "ghostly unpresence of gaps in recorded time." White House Chief of Staff Alexander Haig (1973-74) actually suggested that the Nixon tape-gap was the result of "some sinister force." The refusal to replay Tape 342 on NARA's part signals a desire to remain in the suspended past-life of the tape in the hopes that Nixon's sound-ghost will appear not through the repeat performances of the tape but through the exorcisms of new media technologies.

→ H301

"We will wonder what he may have wanted to keep secret. We will wonder what he may have kept of his unconditional right to secrecy, while at the same time burning with desire to know, to make known, and to archive the very thing he concealed forever. What was concealed? What did he conceal even beyond the intention to conceal, to lie, or to perjure?[63]

GRAVE SECRETS: Second-harmonic magneto-resistive microscopy (SH-MRM) is one such new digital technology, a form of forensic analysis that works optically by scanning and creating an image-map of a sound. Rather than actually making contact with a tape, sensors move back and forth across its surface—line-by-line—slowly generating a topographic image of the tape's magnetic field over millions of points. This mapped data can then be entered into an imaging program and if enough data is recovered the original audio signal can be rebuilt. SH-MRM has

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[61] Vanhanen, Loving the Ghost in the Machine: Aesthetics of Interruption. P. 5.
[62] Janne Vanhanen, Loving the Ghost in the Machine/Aesthetics of Interruption, 2001, ctheory, Available: www.ctheory.net/articles.aspx?id=312, October 2005. P. 1.
[63] A prophetic incantation of Nixon that haunts Jacques Derrida's discussion of what every "careful concealer" [Freud] may have wanted to keep secret in Derrida, Archive Fever: A Freudian Impression. P. 36.

recently been used to recover sound from damaged flight data recorders. "The SH-MRM technique is exacting; two inches of cassette tape can take an hour to scan. If you're passing a half-inch-wide tape over a 1-micron-wide head," says David Pappas of the National Institute of Standards and Technology (NIST), "you have to scan it about 12,000 times to realise the full resolution."[64] So what we might ask would Nixon's voice look like?[65] In an ironic twist, Papas was considering applying SH-MRM to the Nixon tape-gap but since September 11 2001, the resources of the NIST lab have been almost entirely redirected towards homeland security. The recent Bush Presidency in derailing attempts to resuscitate another Republican President averts a potential verdict of guilty, stalling further comparisons between the two.

This narrative motif of loss and salvage is fundamental to NARA's archival pledge to Tape 342 and consequently constitutes the baseline for my argument, which contends that the rhetorical framework of recuperation that has been overlaid onto Tape 342 disavows its present status as already fully enunciatory. Arguably the machine already 'knows' and 'remembers' what Nixon said, but our deterministic faith in technology doesn't typically extend to such radical ontological conversions whereby inert matter is reconceptualised as constitutive of a series of dynamic processes. Moreover this research argues that NARA, in focusing upon the singular goal of the recovery of intelligible speech, thwarts the possibility of activating other potentially generative narratives. Emphasizing the promissory note of technology accentuates its messianic impulse to resurrect the artefact for us at some future date. Asserting the tape's contractual purchase with the past as well as with the future yet to come disavows its immanent potential to say something right now. It must be noted that although the notion of "archival futures" that subtends this case study is equally committed to the past and future as a transmissional process whereby technical objects can be made to speak through time, NARA's archival desires are instrumental in their objective to coerce a particular testimony (what Nixon said) from the artefact; one that has largely already been pre-narrativized. Whereas my convictions are guided by an understanding of the future as engaged in a process of overlay and feedback whereby past and future transpire to tease the object into tentative articulations. As has been stated elsewhere (by Stengers and in a manner of speaking by Heisenberg) no entity can never know in advance which if it many virtualities its own history will ultimately testify to. Despite NARA's archival vigilance the passage of time will inevitably change the ways in which we perceive and decode the object's meaning even in its protracted state of suspended animation. This temporal inflection has already marked the tape and is doing so right now within the very pages of this text. However the recognition of Tape 342's enunciatory capacity is not simply an act of conceptual détournement but an ontological provocation that demands, as Stengers implores, that we consider "the possibility that it is not man but the material that 'asks' the questions, that has a story to tell, which one has to learn to unravel."[66]

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[64] Paraphrased from McNichol, Richard Nixon's Last Secret. P.5.
[65] Visualisation technologies such as SH-MRM will also allow scientists to scan Tape 342 for any residual fingerprints. This could prove that Nixon himself handled the tape.
[66] Isabelle Stengers, Power and Invention: Situating Science, trans. Paul Bains, Theory out of Bounds, eds. Sandra Buckley, Michael Hardt and Brian Massumi (Minneapolis: University of Minnesota Press, 1997). P. 126.

"Next to a man's wife, his secretary is the most important person in his career. She has to understand every detail of his job; to have unquestioning loyalty and absolute discretion. On every count Rose measures up. I'm a lucky man."[67]—Richard Nixon, 1957

THE GAP: When news of the tape's potential tampering was made public, Nixon's personal secretary, Rose Mary Woods (now deceased) made two rather contradictory public statements. In her court testimony of November 8 1973 she asserted her secretarial competency, flatly denying ever making any stupid transcription errors when handling the tape recorder. "The buttons said on and off, forward and backward. I caught on to that fairly fast. I don't think I'm so stupid as to erase what's on a tape."[68] However a month later, under cross-examination in a federal courtroom, she told a rather confused story of how she might after all have made "a terrible mistake" and been partially responsible for the glitch. Woods claimed that while she had been transcribing the tape on her UHER 5000, the telephone suddenly rang causing her foot to press the wrong pedal thus producing the erasure. Summoned by the imperative ringing of the phone, summoned to speak in court, to testify, Rose Mary Woods was called to action, both to explain her actions and ultimately the actions of her boss. When audio experts examined the tape in 1974 they concluded that the RECORD/STOP/RECORD button had actually been pressed 5 to 9 times. The materials themselves told a different story thus refuting the secretary's loyalty and attempted admission of guilt.

▣→ S101 / S102 / S103 / 105

REWIND BACK TO 1947. In an interesting parallel story, history finds another secretary foiled by the machines of inscription and the men they wrote into history. Janet Freed, secretary to Dr. Freemont-Smith was responsible for transcribing the audio recordings from the annual *Macy Conferences on Cybernetics*, which took place from 1943-54. In a letter dated January 31 1947 and addressed to researcher Warren McCulloch which accompanied the typed transcript for the second Macy conference, Janet Freed wrote "that she knew there were 'many, many blank spaces' but that [her boss] Dr. Freemont-Smith had ordered her and her staff to listen to the recordings only twice and to type what they heard. Evidently, transcribing the tape recordings was taking too much staff time, and Freemont-Smith did not want to waste his resources that way".[69] The gaps in the transcript are as much a result of the poor quality of the original audio-recordings and Janet Freed's unfamiliarity with the specialized languages of first wave cybernetics as they are a consequence of her somewhat failed attempts at transcription.[70] N. Katherine Hayles, in her seminal book *How We Became*

[67] Richard Nixon, in a press interview, 1957. Anon., "The Secretary and the Tapes Tangle," Time Monday December 10 1973. P. 1.
[68] Anon., "The Secretary and the Tapes Tangle."
[69] N. Katherine Hayles, *How We Became Posthuman*, pp. 81.
[70] These included Claude Shannon's theory of information, Warren McCulloch's model of neural functioning and John Von Neumann's work on biological systems. See also chapters 1 & 3 in N. Katherine Hayles, How We

Posthuman, makes the point that aside from the participation of Margaret Mead with her husband Gregory Bateson (whose work on media ecology became an important reference for Deleuze) Janet Freed was the only other female attached to the *Macy Conferences* in any substantive way. Indeed the sonic resonances of these early *Macy Conferences on Cybernetics* with their focused attention on the relationship between "man and machine" were transmitted through the circuitry of a secretary, who as a stenographer became a kind of tape recorder herself. Janet Freed listened intently to the machine, which itself had listened to a discussion about machines. And yet Janet, like Rose 25 years later, is thwarted by both a man and a machine in her attempts to produce the flawless mimetic text that translation desires. Once again we are left with a gap.

THE LACK: It is only 'natural' that the woman takes responsibility for this gap. The woman knows all too well about the gap—the lack—that marks her subjectivity within phallocentric discourse. French feminist, Julia Kristeva argues that because of her pre-oedipal (maternal) and oedipal (paternal) links, the woman-as-mother, remains a split subject and is therefore unable to occupy the position of a speaking subject within the symbolic.[71] In Lacanian terms she is lacking. According to Kristeva, it is only men who can acquire a coherent position within the symbolic order for only they manage absolute renunciation of their oedipal drives. Grosz, in writing about Kristeva's work, states that through maternity the woman reproduces the social matter that, once subjected to the father's law, provides subjects for and ensures the continuity of the social formation. Her plenitude or maternity constitutes a breach in the symbolic; it is an unspoken jouissance or excess, whose form is always reduced to—but never exhausted by—the symbolic.[72]

"The maternal body is the module of the biosocial program. Its jouissance, which is **mute**, is nothing more than a **recording**, on the screen of the preconscious, of both the **messages** that consciousness, in their analytical course, picks up from this **ciphering** process and their classifications as empty foundation, as a-subjective lining of our rational exchanges as social beings."[73] [emphasis added]

Luce Irigaray forwards a related understanding of the concept of lack in suggesting that, "historically in the west, time is conceived as masculine (proper to a subject, a being with an interior) and space is associated with femininity (femininity being a form of externality to men). Woman is/provides space for man but occupies none herself."[74] In these formulations, the space of the feminine becomes a kind of essential recording device, which encodes the "unspoken foundation of all social and signifying relations" so that "unity, stability and identity are possible."[75]

Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics (Chicago: University of Chicago Press, 1999).

[71] See "Julia Kristeva: abjection, motherhood and love," in Elizabeth Grosz, Sexual Subversions: Three French Feminists (St Leonards: Allen & Unwin, 1989).

[72] Grosz, Sexual Subversions: Three French Feminists. P. 80.

[73] Julia Kristeva, "Motherhood According to Bellini," trans. Thomas Gora, Alice Jardine and Leon S. Roudiez, Desire in Language: A Semiotic Approach to Literature and Art (Oxford: Basil Blackwell, 1981). P. 241.

[74] Luce Irigaray, An Ethics of Sexual Difference, trans. Carolyn Burke and Gillian C. Gill (London: The Althone Press, 1993). P. 15.

[75] Grosz, Sexual Subversions: Three French Feminists. P. 81.

Etymologically speaking the secretary is the "keeper of secrets". In providing the space for the unspooling of machinic speech she becomes the de facto repository for masculine discourse: speech acts performed [recorded] in the specialised domains proper to the masculine subject—the inner sanctum of the Oval Office, outside of her own feminine jurisdiction—the office. The lack that Woods claimed to have inscribed within the tape appears to be an extension of her own subordination within the patriarchal operations of the White House. Is she as Plato and Socrates condemn a mere conduit for the voices of others—a device for channelling the audio dispatches that would broadcast Nixon into history? Is she unable to answer for herself as an embodied subject in the world, only ever able to repeat the texts that she transcribes? Like the imitative arts of painting and writing, the secretary when called to testify before the tribunal of history finds that her hands are literally tied to the typewriter and her ears plugged by the tape recorder.

"[A]s the presumed representatives of a spoken word, as agents capable of speech, as depositories or even fences for the words the court is trying to force out of them. If they should turn out not to be up to testifying in this hearing, if they turn out to be impotent to represent a live word properly, to act as its interpreter or spokesman, to sustain the conversation, to respond to oral questions, then bam! They are good for nothing. They are mere figurines, masks, simulacra."[76]

▣→ T103

THE INTERVAL: Is the secretary's agency dictated by the operations of the machine rather than by conscious self-determination?[77] How might we reread the gap in the tape or blank in the transcript not as a space of absence but as *the interval* in which all movement occurs and thus all agency? Bergson, like Charles Darwin, argues that movement or species change can only take place within the "transition *between* spaces" and is therefore not the outcome of the accumulated text of history but that of a series of stories characterised by the singularity of transactions negotiated between unique intervals. "Chance erupts both at the level of random variation and at the level of natural selection and, perhaps more interestingly, in the gap or lag that exists in their interaction."[78]

"Install yourself within change, and you will grasp at once both change itself and the successive states in which *it might* at any instant be immobilised. But with these successive states, perceived from without as real and no longer as potential immobilities you will never reconstitute movement. Call them *qualities, forms, positions*, or *intentions*, as the case may be, multiply the number of them as you will, let the interval between two consecutive states be infinitely small. . . The movement slips through the interval, because every attempt to reconstitute change out of states implies the absurd proposition, that movement is made of immobilities."[79]

If "movement slips through the interval" doesn't the gap repudiate the secretary's role as a mere cipher for informatic transfer and open up the possibility that space itself can be

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[76] Jacques Derrida, "Plato's Pharmacy," in Derrida, Dissemination. P. 137.
[77] Reworked from Mark Hansen's discussion of Karl Marx's critique of the machine age as relocating the agency of the worker within the machine. See "Breaking with the System: Technology beyond Semiotics," in Mark Hansen, Embodying Technesis: Technology Beyond Writing, Studies in Literature and Science, ed. N. Katherine Hayles (Ann Arbor: University of Michigan Press, 2000). P. 218.
[78] Grosz, "Thinking the New: Of Futures yet Unthought." P. 20.
[79] Henri Bergson, Creative Evolution, trans. Arthur Mitchell (Mineola: Dover Publications, Inc., 1998). P. 308.

reconfigured as time. The tape recorder's ontological status as providing us with a record of a specific time-event that originated outside the device, is complicated when temporality is returned to the machine and reconceptualised as that which is also constitutive of time. "The cut [or gap] is the mechanism whereby temporality becomes a product of the apparatus."[80] Cutting and editing assert temporality; they are the formal means by which time is machined.

THE CUT: If we consider the operations of the straight-cut or edit in cinema as that which reconciles the visual distance between two non-contiguous images through the active intercession of the gap, then the blank, black space between frames that marks the transition from one image to the next becomes affirmative: productive of difference in opening up the narrative to other image-flows. On either side of the frame-gap the illusion of temporality has already been fixed as that of extensive duration, whereas the space-time compression of the frame-gap is one of intensive visual mediation. The spectator never sees successive frames at 24 fps but an intermediate image, what Deleuze has called a mobile section. It is in this interface that movement actually occurs and meaning is produced. As discussed earlier with respect to technologies of exactitude, the recorded event always exceeds its indexical relationship to the real in carrying forward extraneous traces from the recording process, creating a supplement to the original live event. This condition of over-coding produces a plenitude in the image or recorded event that threatens to overspill the limits of what can be assimilated as coherent meaning for a given viewer or listener. The gap or the interval on the other hand opens a necessary temporal breach that encourages reflection upon the recorded event. It literally pulls us out of time, out of information overload [and psychosis], to bridge the perceptual distortions and disjunctures produced by the edit or the cut. The gap is a puncture that doesn't merely signify discontinuity between elements but provokes a set of temporal operations that have the potential to narrate other versions of events, entangling other histories. It performs a mediating function that enables heterogeneous elements to connect promiscuously with each other. "From the point of view of the mediator, one must attempt to insert a new series in between, in other words, a new series that displaces the authoritative or established discourse within which it develops. This is how one sets out to not just say something new, but to say something different."[81]

THE EDIT: Film theorist Mary Ann Doane suggests that the edit in cinema is not only recuperative in managing excess filmic signification, but also generates anxieties about discontinuity and absence at the level of the film's overt textuality as well as at the level of its technical organisation. The interval makes explicit the gap between frames, which the viewer never sees, sitting as we do in darkness for almost 40% of a film's running time. This "re-inscription of the gap between film frames" through "editing potentially constitutes a persistent

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[80] Mary Ann Doane, The Emergence of Cinematic Time: Modernity, Contingency, the Archive (Cambridge: Harvard University Press, 2002). P. 224.
[81] Peter C. Van Wyck, Signs of Danger: Waste, Trauma, and Nuclear Threat, Theory out of Bounds, eds. Sandra Buckley, Michael Hardt and Brian Massumi, vol. 26 (Minneapolis: University of Minnesota Press, 2004). P. xx.

reminder of the abyss of darkness that subtends cinema."[82] Doane's conception of cinema as conjoined to the shadows of the crypt by means of the edit or space of the interval invokes the kind of maternal space conjured by Irigaray when she states that "woman is/provides space for man but occupies none herself". The interval for Doane both mediates the excessive plenitude of the image and is haunted by an absence, the spectre of cinematic darkness that threatens to engulf the viewer as it portends the death of the image 24 times a second. This is a related threat to that posed by the abject in the work of Kristeva in which the [masculine] subject is reminded of their own mortality—by the sign of the reproductive woman—who represents the original fusion of subject and object. The desire for cohesive autonomy inaugurated by the mirror stage becomes the lifelong pre-occupation of the subject whose sense of fragmentation is at odds with their specular image; a quest that is spurred by the psychic memory of maternal oneness. In short, the abject signifies the inadequacy of the subject's ability to differentiate completely between its corporeality and its "tenuous bodily boundaries". It is a dark abyss, a kind of nothingness, which threatens to engulf the subject and marks its potential obliteration. Rose Mary Woods?

THE BREACH: It is important to hang onto the conception of the interval as a temporal breach, a hole punched in time, rather than a space of absence and anxiety requiring our ministrations and replenishment. In folding space into time we begin the task of staving off the binaries that readily align themselves with this formulation. These include the dualisms of woman/man, absence/presence, lack/possess and being/becoming forwarded by theories of subject formation that are bound to a schematic model of development as a-social, shunting us along chains of semiotic mediation which are syntagmatically oriented. Such a view regards the technics of subject formation in terms of its purely structural coding operations: how the subject is produced in a causal signifying chain (means/ends) rather than how the subject emerges through processes of difference that are irreducibly heterogeneous and fundamentally unstable. Woman cannot be located by way of opposition to man, just as space is no longer opposed to time. How then might we reconceptualise the machinic gap or interval as a kind of ontological and temporal antidote to the estrangement set up by these rhetorical oppositions?

The interval is not a structural element that mediates symmetry; that suspends two images or maintains a gap between voice recordings. The interval is a machine for producing difference. Its function is to assert disjunction in order to make explicit the temporal dimensions at work in the mechanisms of the interval. It is a machinic process that cuts space, mines its virtualities, and triggers its temporal registers. The anxiety of the gap is not consecrated in the absence of presence as Doane suggests but is machined by the experience of uncertainty that it foreshadows. The abyss that threatens to engulf the subject is conditioned not by the knowledge of one's inevitable mortality, but by the strange "eruptions of the future" that will blow holes into the terra firma of the subject's knowledge systems.

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[82] "Seno's Paradox: The Emergence of Cinematic Time, in Doane, The Emergence of Cinematic Time: Modernity, Contingency, the Archive. P. 185.

"If you don't hear anything, there's no reason to believe there's any hope of processing or finding something," said John McKnight of the Magnetic Reference Laboratory in reference to Tape 342.

THERE'S NOTHING OUT THERE: In Deleuze's text *Bergsonism*, he discusses the idea of nothing as always containing "more" not less than something. An idea Bergson develops with respect to the notion of the "false problem". There are two sorts of false problems for Bergson: Non-existent problems defined as problems whose very terms contain a confusion of the "more and the less" and badly stated questions, so defined because their terms represent badly analysed composites.[83] There is more, contends Bergson, in disorder than order, more in the possible than the real, and more in non-being than in being. "In the idea of disorder there is already the idea of order, plus its negation, plus the motive for the negation when we encounter an order that is not the one we expected."[84] When something doesn't perform as expected, states Bergson, we perceive it as lack, but this lack is not implicit in the thing itself, but is rather a projection of lack onto the thing as the absence of what interests us, something I discussed in the introductory section *"A Question of Interest"*. When NARA's attempts to recover erased audio material from Tape 342 were returned as unfeasible, John Carlin Chief Archivist attributed the failure to the lack of suitable forensic technology. "I am fully satisfied that we have explored all of the avenues to attempt to recover the sound on this tape. The candidates were highly qualified and used the latest technology in their pursuit. We will continue to preserve the tape in the hopes that later generations can try again to recover this vital piece of our history."[85]

📖→ **N107**

SOMETHING IS OUT THERE: What interests NARA is the recovery of Nixon's speech and thus the technologies used to analyse it can be said to be lacking or deficient in this regard, but what interests me is something else entirely. The ontologic reality of the tape as lacking is conceptually overturned and becomes as Bergson notes an archive of its possibility for becoming other. "When we ask: why is there something rather than nothing" we make the mistake of assuming that something must logically be greater than nothing, that something must by definition contain more information and more meaning.[86] On the contrary "nothing" is far more polyphonic than something as is evidenced by the multiple sound-events encoded within the material substrates of Tape 342, an artefact which can now machine three different virtual registers.

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[83] Gilles Deleuze, Bergsonism, trans. Hugh Tomlinson and Barbara Habberjam (New York: Zone Books, 1991). P. 17.
[84] Deleuze, Bergsonism. P. 17.
[85] NARA archivist James Carlin in NARA, Press Release: Archivist Accepts Watergate Tape Panel Recommendations www.archives.gov, May 8, 2003).
[86] Deleuze, Bergsonism. P. 18.

- Nixon and Haldeman's initial recorded conversation.
- The negation of the original sound-event and superimposition of a second recording conceptualised as an act of 'erasure'.
- The motivation for the negation: Nixon's attempt to obliterate its information-content.

When we think problems in terms of more and less we tend to confuse differences in degree between states as differences in intensity of the same thing, when what they actually are, says Deleuze, is differences in kind. The radical deterritorialisation of Tape 342 through its fumbling 'erasure' produced a kind of metallic speech, punctuated by clicks, hisses, and buzzing that marks its difference in kind to that of Nixon and Haldeman's conversation, which brackets the 18-1/2 minute gap. As these recordings of 'silence' wait out the years in the cryogenic tanks of the archive they pass their time inventing new micro-mechanical modes of articulation, increasingly distancing themselves from the human vocalisations that were transmitted in the Oval Office on June 20 1972.

STOP. What stories does Tape 342 want to tell?

"Look at this ashtray" says Cage: "Its in a state of vibration. We're sure of that, and the physicist can prove it to us. But we can't hear the vibrations. When I [John Cage] went into the anechoic chamber, I could hear myself. Well, now, instead of listening to myself, I want to listen to this ashtray. But I won't strike it as I would a percussion instrument. I'm going to listen to its inner life thanks to a suitable technology."[87]

Cage's desire to listen to the reverberations of atoms nattering away inside his ashtray recalls Stengers insistence that we pay heed to the stories our materials want to tell us. However for Cage this act of listening requires the intercession of an acoustic nano-stethoscope that can amplify microsounds and bring them into the presence of human hearing. Previously the sound-making object or instrument was energised by an external percussive force, a form of direct contact, which displaced air molecules and created a sine wave that made its way to the ear where it was translated into sound. After his experience of the anechoic chamber, Cage realised that an object doesn't require the arbitration of an external agent to induce its sonic utterances because sound is produced continuously through the vibrating movement of atoms at submolecular levels. An observation, which reinvents the "object as process" and assigns dynamism to even the most seemingly inert of things. For Cage technology becomes the means of expression, the animating force that can reveal the audition of particles. In describing his plans for probing the interiority of the ashtray he said "at the same time, I'll be enhancing that technology since I'll be recognising its full freedom to express itself, and to develop its possibilities."[88] Many, including of course NARA, share a similar mythic faith in science and technology's capacity to reveal the internal or micro-perceptual workings of our physical world. As Kahn notes with some irony, Cage's critique of acoustic mass media focused upon the sociality of sounds and their tendencies towards signification and narration, a degenerate tendency he associated specifically with the "expressive" qualities of music and voice, and yet at

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[87] Cage, "The Future of Music." P. 196.
[88] Kahn, "John Cage: Silence and Silencing." P. 198.

the same time Cage revelled in technology's expressive potential.[89] The following questions then arise with respect to Tape 342. How might we perceive of its microsounds and their affective agency without the benefit of an electron microscope and techniques of amplification? Can we accomplish this through intuition and the speculative hearing aid of forensic imagination? How might we listen intently to our materials without determining in advance the means by which they will be made to speak? How might we listen to Tape 342 without actually going to College Park, Maryland and listening to the tape?[90]

Unsolved Mysteries

The 18-1/2 minute tape-gap is ultimately not a space for the retrospective projection of recuperated speech—history—but a transition that designates the interval between the actual and the virtual, between what was said and what might be said in the future. Only the digital with its comprehensive program of acoustic scanning along with other as-of-yet to be invented processes might eventually retrieve sufficient data for restoring traces of human speech. However the actual machinic utterances that the tape already emits as well as those that it may transmit as its reels off towards an uncertain future can activate even more radical imaginary registers. In comparison with the network of speculative ideas and possibilities that the gap in the tape invites for thinking new stories and entangling new events, the recovery of intelligible speech seems a rather pedantic objective. In spite of NARA's technical exertions, for many the very existence of the tape-gap has already rendered an unequivocal verdict of guilty. This is exactly the kind of preemptive thinking that we must resist because it short-circuits narrative potential, preventing any other possible stories from emerging and controls the limits of discourse. But for us, those inclined towards fabluation and proposition making, the mystery of the missing 18-1/2 minutes is not entirely an open and shut case. In creating a temporal breach within the extended voice recordings registered on tape, the gap actually encourages its virtual magnetic polarities to reach out beyond the formal limitations of what might have been said within a period of 18-1/2 minutes to entangle themselves with other signifying vectors.

Even if NARA were to fully restore Tape 342's magnetic speech surely it would be useful to continue to extract the tape from the archives in years to come and reassess its historical status—its limited presentness—within the traffic of time. An ontology of the output insists that all entities transact their histories relationally at the intensive conjunction—the interval—between the past and future which is always in a state of continuous and overlapping movement. But the rate of flow or speed with which the future elides with the present and slips into the past is

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[89] Kahn, "John Cage: Silence and Silencing." P. 198.

[90] After much intentional procrastination I finally ordered a copy of Tape 342 in the spring of 2008 so that I might listen to the 18-½ minutes of archived silence. I only did this after writing this chapter first. As I suspected that tape noise was highly energetic, its Geiger-like score producing an energetic and lively composition that immediately overturns any notion of mute silence. What did surprise me however was just how poor in quality the actual voice recordings that bracket the silence are. It is extremely hard to discern any human speech pattern and suggests that a project of recovery will be further complicated by this fact.

▣→ S203

necessarily variable, determined differently by entities for whom time matters differently. Radioactive particles for example, decay at radically different time scales than do humans or viral infections. As an artefact whose plastic polymers are disarticulating, no longer able to maintain their material integrity, Tape 342 is rapidly perishing despite NARA's archival attentions. As with the lost NASA lunar tapes *(see Glossary entry Outer Space)* the specific analogue technology used to record [produce] the tape-gap is already long gone but for a remaining few technology buffs who salvage obsolete machines from their e-waste extinction. Time is an event-modulator that shifts the topo-political terrain whenever the artefact re-emerges (in whatever condition) from out of its protracted sleep in cold storage. Prior meanings are necessarily unsettled as the artefact renegotiates its contractual terms and authoring agency within the conditions of the present. As an "indexical inference" signalling towards an originary event Tape 342 (even in its now degraded form) contains trace elements—material and historical—that are not simply of the past but that can be conceptually and speculatively remolecularised with other entities to produce new knowledges and new forms of archival practice.

🕮→ **G101**

Without a definitive narrative to anchor the meaning of Tape 342's gap, an infinite number of possible sound-events can now be engineered of which the culpability of Nixon in the Watergate scandal is just one of many virtual acoustic scores that might be scripted. The alterity of the gap as "different in kind" to the other conversations captured on tape, is a necessary condition for creatively networking Tape 342's 'silent' or machinic speech acts. Clearly this potential for discursive entanglement has been present since the gap's first public appearance in 1973. In a sense the tape-gap was always-already there, already encoded and prefigured within the virtual archives of the machine, prior to Nixon ever having placed the tiny reels into his SONY TC-800B and pressed RECORD. The very fact of a tape recorder is a prehension or overture that a recording of some kind (deliberate or accidental) will likely occur at some point, which will in turn attach itself to a localised event-transmission. Our task has been to detect coding errors in the historical program run by NARA but also to probe the intercession produced by the glitch. Should NARA succeed in discovering a technology that will be able to repair the gap in the tape and glue history back together so-to-speak, such a process will never fully erase the collective anarchives recorded deep within the materiality of the tape, which must always include its years of machined aphasia as well as those virtual tracks yet to be played. "The present and future diverge from the past: the past is not the causal element of which the present and the future are given effects but an index of the resources that the future has to develop itself differently."[91] Tape 342 is ultimately a placeholder for the multiplicity of different recording options that the machine has to mix new tracks and playback alternate histories.

REWIND AND PRESS RECORD AGAIN.

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[91] Elisabeth Gross's discussion of futurity in "Darwin and the Ontology of Life," in Elizabeth Grosz, Time Travels: Feminism, Nature, Power (London: Duke University Press, 2005). P. 38. See also Jacques Derrida, "Before the Law," trans. A Ronell and C. Rouston, Acts of Literature, ed. D. Attridge (New York: Routledge, 1992). P. 198.

After Images

"Is it possible for a photograph to change the world?"[1]—Errol Morris

"The light of the photo comes to us out of the night of a past I have not lived—but this night was once day. Now that light has irreversibly become night—that's what the past is all about (and the ghost too)."[2]—Bernard Stiegler

"What I dread when I am asked to bear witness is not only or primarily the pain of accessing extremely painful memories; and/or the pain of discovering all or part of what I thought unforgettable; but that I am asked also to definitively forget in order to release, this side of the event horizon, the created voice that can tell about a created but true event."[3]—Jalal Toufic

PICTURE THIS: On June 8 1972 the mechanical drum of a Muirhead K220 Picture Transmitter slowly rotated, scouring the surface of a 5 x 7 inch black and white photograph that had just been placed on its scanning drum. The machine's photoelectric cell was charged with the task of converting variations in the amount of light reflected by the print into a series of electronic pulses that could be transmitted, line-by-line, over a standard telephone relay system. As the photograph revolved around the drum of the machine, the trace of another incandescent emerged: the residual glow of a napalm fireball that had just scorched the South Vietnamese village of Trang Bang, 30 miles north-west of Saigon. An air strike by two South Vietnamese Skyraiders (from the South Vietnamese army 25th Division) erroneously levelled the village in an attempt to dislodge a recent North Vietnamese roadblock on Route 1 near Tran Bang. During this action the 518 Squadron of the Vietnamese Airforce from Bien Hoa airbase near Saigon, dropped explosives, white phosphorous bombs as well as napalm.[4] The anguish of Phan Thị Kim Phúc as she runs naked towards the camera of press corps photographer Huỳnh Công Út (Nick Ut) along with other members of her family and villagers has been permanently seared into our collective cultural memory.

▣→ **M402 / P101**

Her image is one of the three most iconic and widely circulated photographs documenting the human despair and violence of the Vietnam War, each of which garnered their respective photographers the coveted Pulitzer Prize for print journalism. The others are Malcolm Browne's image of Buddhist monk Thích Quảng Đức's act of self-immolation in a busy Saigon

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[1] "Is it possible for a photograph to change the world? Photographs taken by soldiers in Abu Ghraib prison changed the war in Iraq and changed America's image of itself. Yet, a central mystery remains. Did the notorious Abu Ghraib photographs constitute evidence of systematic abuse by the American military, or were they documenting the aberrant behavior of a few "bad apples"? Standard Operating Procedure, dir. Errol Morris, Sony Classics, 2008.

[2] Bernard Stiegler, "Images and after-Images," Art Photographie Numerique: L'image Reinventee, ed. Ysabel de Roquette, Cypres: Arts Sciences Technologies Cultures (Marseille: Robert & Ecole D'art D'Aix en Province, 1995). P. 232.

[3] Jalal Toufic, Over-Sensitivity (Los Angeles: Sun and Moon Books, 1996). P. 46.

[4] Incidents of military mistakes, friendly fire and the killing of unarmed civilians were frequent during the Vietnam war, epitomised most horrifically by the *My Lai Massacre* of March 1968 in which more than 500 innocent women, children, and old men were killed by marauding American troops in the My Lai hamlet of South Vietnam. Only one man, Lieutenant William L. Calley Jr., was ever found guilty of this mass genocide but in 1974 his conviction was overturned releasing him from further imprisonment.

intersection on June 16 1963 to protest increasing religious persecution by the American-backed regime of President Ngô Đình Diệm (1955-63). And the other equally horrific image is that taken by Eddie Adams of South Vietnamese General Nguyen Ngoc Loan executing a Viet Cong officer with a single shot to the head on February 1 1968.

▣→ V201 / V202 / V203

The Muirhead K220 Picture Transmitter used for the electronic relay of the photograph of Kim Phúc's napalmed body during Vietnam is also prospectively linked to the production of yet another Pulitzer Prize winning image almost 20 years hence—that of a dying child being preyed upon by a waiting vulture during the Sudanese famine shot on March 1 1993. Both images produced international shockwaves and were heralded for their disturbing depictions of a crisis, and while the Sudanese photograph taken by South African photographer Kevin Carter was not transmitted by Muirhead audio signal as was the earlier image of Phúc taken by Nick Ut, Carter's photo is none the less retroactively entangled with that taken by Ut. Although I begin this discussion by briefly examining their shared rhetorical content as participating in the traditions of documentary reportage, it is their capacity to transmit and actualise emotive affects (of both empathy and outrage) that ultimately conjoins them. An entanglement, that in due course, was undone as each photograph provoked radical variations in the ways that its respective image-event unfolded. (See the subsequent discussion on pgs. 65-67.)

▣→ C101 / C102

On the very simple level of representation one of the many arguments that can be made concerns the conventions of photography exemplified in both images as the "unflinching realism" of the documentary gaze turned towards the victim/subject. This is a primary attribute shared by the two images, which in turn triggers the affective dimensions of each. In this regard, Ut's artefactual image can be said to anticipate Carter's image yet to be taken, even while the former is itself also linked to the many other crisis-born images that came before it such as those already cited above. But contrary to the formal organisation of the two images which are primarily composed of elements that are self-evident within the picture plane (framing, lighting, point-of-view, depth of field etc.), the properties of affect are attributes of a different kind that require an external perceiving subject to register themselves as felt effects; they are not a priori givens in the constitution of the image-regime. In general when attributes arising from differentiated contexts coalesce, it is the fact that some of their properties are ontologically consistent that allows them to be mutually entangled and not simply their shared representational content. For example, in both analogue and digital photography is it their ontological capacity for granular or pixel manipulation that comprises one such shared attribute. Which is to say that entanglement, if it is to be used as a tool and practice, must also focus upon how the picture does its work (its ability to organise space and time) and what it can do (the affects that it can transmit) rather than preoccupy itself entirely with what it is about (its pictorial dimensions). However in the case of the two images currently under discussion both their form and content are arguably of common concern and share many like-connections.

In allocating a precise visual language, the documentary convention works—machines—the image in a predetermined way that tends to homogenize differences in content. In fact the greater the iconic stature of the image, the more quickly a tedium of familiarity sets in, discharging its affective capacities and levelling its content. In this regard the machinic apparatus that attends to this convention can be said to be an optics of preemption (within the narrowly defined terms of pre-narrativization) in so far that it sets up a situation in advance of its arrival. What is signalled by this particular reading of the documentary genre is akin to Claude Shannon's theory of information, whereby the formal attributes of the system operate as placeholders for meaning, which must be retroactively inscribed through other external signifying or representational forces that are themselves contextually and historically conditioned.

Although distinguished as singularly important historical documents, do these photographs continue to honour their transactional contracts in the present as enduring witnesses that can testify to the atrocities of the past or does their iconic status intervene to moderate and even cut their affective flows? Has the proliferation of such crisis-bound imagery rendered us immune to their emotive discharges? This is one the many problematics that a method of machinic entanglement helps us to unravel. As suggested in *Chapter One: Archival Futures* the artefact is always subject to modulation as it transits between constitutive past-events to resurface at different points in the future and resequence with other evolving narratives. Such transmissional re-encodings will likely involve a certain betrayal of 'origins' as the image-artefact submits to processes of deterritorialisation and reterritorialisation that allow it to service a wide range of discourses. But even as it undergoes its likely contextual transformation we are still returned to Brain Massumi's conviction that "media transmission is the becoming of the event", in that the future emergence of the image-event is always governed by the artefacts teleportation through space-time and the contingencies that attach itself to such intertwinings and passings. Entanglement in this regard must be understood not only as a spatial or cartographic tool for creatively reworking meanings, renewing urgencies, and activating new relationships between machinic objects and events over time, but also as a process for revealing how the virtuality of the artefact can be self-entangled within an ontology of time to actualise yet another version of events.

WHAT CAN A DEFUNCT MACHINE STILL DO? Using a supplementary AM/FM converter, it took the Muirhead K220 Picture Transmitter exactly 14 minutes to transmit this disturbing record of the Vietnam War into history, a transmission that would signal the infamy of the war machine at its most dynamically lethal. In examining the technical operations of the Muirhead Picture Phone and its sonic image-producing regime, this case study explores a machine that; in redistributing its perceptual organs, stresses difference rather than resemblance as the generative force propelling its medial drives; a machine that isn't comfortably situated within a teleology linking analogue media machines to contemporary digital processing machines; a machine that confuses perceived boundary distinctions between image and sound, matter and energy, body and machine; and finally a now defunct-machine whose transmissional capacities have reached forward into the present, enmeshing themselves within emergent current events. But just how do these telematic extensions repotentialise the past to kindle future events?

A GOOD PICTURE: By 1972, the year of Nick Ut's acclaimed photograph, all remaining American ground-troops had been evacuated from Vietnam as peace talks resumed in Paris. However the American-lead Airforce continued its bombing of Hanoi and various North Vietnamese targets such as Haiphong Harbour even while Henry Kissinger (President Richard Nixon's then-Secretary of State) was secretly meeting with the North Vietnamese to negotiate a cease-fire.

"The girl was running, with her arms out. She was crying, Nong qua! Nong qua!' (Too hot! Too hot!). She had torn off all her clothes. When I saw she was burned, I dropped my camera beside the road. **I knew I had a good picture.** I got her into our van and took her and the family to the Cu Chi hospital."[5] [emphasis added]

The day of the napalm attack, Ut shot several rolls of film using a German Leica camera manufactured in 1965 fitted with a Leitz wide-angle f/2 35 mm Summicron lens. While he was not the only photographer or journalist on the scene it was decided that he would take the wounded girl to hospital prior to dropping off his film for development at the lab of the Saigon Associated Press Office. Although network coverage of the war had substantially diminished, due in part to the closing of eleven Saigon-based newspapers in 1972 by the South Vietnamese Police, competition between the remaining Saigon press bureaus (AP: Associated Press and UPI: United Press International) was fierce and it was not without some reservations that Ut took time out of his filing deadline to find medical treatment for the girl in the city.

▣→ **L101**

ACID ATTACKS: Napalm is a flammable gasoline gel, in which co-precipitated aluminium salts from naphthenic and palmitic acids are added to gasoline causing it to congeal and cling to all that it comes into contact with. Napalm burns at ferocious temperatures of between 800 and 1,200 degrees Celsius. With third degree burns to 35% of her body's surface, Kim Phúc spent 13 months in a Saigon burn unit run by the Barsky Foundation, a children's medical relief agency. Phúc survived the war and in her teen years was rediscovered as the emblematic "girl in the picture" by the now unified Socialist Republic of Vietnam who regarded her as a living testament to the carnage of imperialist intervention throughout South-East Asia. Consequently Phúc was frequently exhibited to foreign journalists eager to cover the aftermath of the war and new socialist reality of Vietnam. In interviews Phúc contends that she was victimised twice-over: first by the West that caused her debilitating physical wounds (the South Vietnamese Airforce was controlled by US military strategy) and then by her own government who inflicted emotional scars by using her as propaganda tool—evidence of the criminality of war—while her family was brutalised by ongoing poverty to prevent Phúc from defecting.[6] As

[5] Richard Pyle, "Trang Bang Revisited (Excerpts)," AP (2000), June 9 2008 <http://digitaljournalist.org/issue0008/ng7.htm>. P. 1. Pyle, "Trang Bang Revisited (Excerpts)."

[6] See Denise Chong's biography *The Girl in the Picture: The Remarkable Story of Vietnam's Most Famous Casualty*. In 1992, during an airline stopover in Newfoundland enroute to Cuba where she was studying at the

long as she maintained her indexical relationship to that horrific day in June she would be of rhetorical use to the state. As "the girl in the picture" she had become famous; a valuable state commodity too precious to relinquish but also one that was forever archived by her chemical exposures to the past, which include the toxic traces of napalm on her skin as well as the photographic embalmment that fixes her permanently within the image-event. Many years later and now living in Toronto, Phúc was once again singled-out by the lens of the camera which she equated to a form of sudden and violent assault, this time by two British tabloid journalists. "The accident of those two women on the sidewalk," she lamented to Toan [her husband], "was like a bomb falling out of the sky."[7] Today she is an advocate for the peace movement and although it is still the legacy of the image that confers her legitimacy to speak out on such matters, unlike so many other victims of war depicted by photojournalists, Phúc did not remain nameless and voiceless.

TECHNO-CHRONOLOGY: The technical processing and transmission of what has become one of the most compelling images of the Vietnam War is detailed in the short excerpt that follows:

"Nick Ut's eight rolls of Kodak 400 ASA black and white films were developed in the lab of the Saigon AP office by the Japanese photographer Ishizaki Jackson, a known AP Tokyo news photographer at this time. The development solutions (Ilford Microfen developer and self-mixed fixative) were stored in large food jars. Since the temperatures of the chemicals were rarely below 30 degrees centigrade the processing time was relatively short and the film had to be slowly moved at all times, by hand, like slow-motion laundering. The films were then dried in a special cabinet with hairdryers rigged up and switched in a way as not to damage the swelling emulsion.

Nick and Ishizaki prepared a selection of eight 5 x 7 inch prints for the next "radio photo cast" at 5 PM - but an editor at the AP rejected the photo of Kim Phúc running down the road without clothing because it showed frontal nudity. Pictures of nudes of all ages and sexes, and especially frontal views were an absolute no-no at the Associated Press in 1972. While the argument went on in the AP bureau, writer Peter Arnett and Horst Faas, then head of the Saigon photo department, came back from an assignment. Horst argued by telex with the New York head-office that an exception must be made, with the compromise that no close-up of the girl Kim Phúc alone would be transmitted. AP had this equipment stationed next to the switchboard at the Saigon PTT's (Post and Telegraph) telephone exchange in Saigon. The radio conditions were favorable that day and the picture, along with three other photographs of the incident reached the Tokyo photo bureau of the Associated Press. From Tokyo the radio signal coming from Saigon was auto-relayed on AP controlled land and submarine wire communications circuits to New York and London, and from there to AP offices and newspapers around the world."[8]

→ AUDIO M401 MUIRHEAD IMAGE TRANSMISSION

University of Havana, Phúc defected to Canada where she still lives. Denise Chong, The Girl in the Picture: The Remarkable Story of Vietnam's Most Famous Casualty (London: Simon & Schuster, 2000).

[7] Chong, The Girl in the Picture: The Remarkable Story of Vietnam's Most Famous Casualty. Pp. 5-6.

[8] Horst Fass and Marianne Fulton, How the Picture Reached the World, 1998, Available: http://www.digitaljournalist.org/issue0008/ng4.htm, July 13 2006.

ALL THAT REMAINS: Crucial to our ongoing discussion throughout this chapter is the fact that Ut shot more than 240 negatives that afternoon and yet only one image was selected for its eventful transmission. In fact only twelve of these historic negatives still exist today and these are carefully preserved in the vaults of the AP archives including Ut's prize-winning shot, which now only circulates as a digital file. An excerpt detailing Ut's search for his lost negatives follows:

"When Nick Ut returned to the Saigon bureau of Associated Press in the afternoon of June 8, 1972 he brought back eight rolls of black and white Kodak film (400 ASA) from the events around Trang Bang on that day, more than 240 exposures. Most of the original film has disappeared.

Some was discarded already in Saigon or returned to Nick Ut. In line with AP's policy at the time all possibly useful negatives were forwarded to New York headquarters: This included material selected in the first and second editing process in Saigon and most of the negatives not used. In New York the photo desk passed the material to the Photo Library - to be eventually discarded there, most likely in a big clean-out after the end of the Vietnam war. Negatives of pictures that were used for the wires were archived.

Today twelve negatives of the "Kim Phúc incident" remain with AP. They are locked in a safe and rarely touched. The Pulitzer winning negative (1973 award) shows a major scratch across the sky in the upper part of the negative. The original image has been digitally reconstructed and full-size and cropped print versions of the picture are now produced from this digital information. The pictures used and transmitted from the original film in June 1972 are preserved in the AP's digital archive. *(See also Glossary entry Vault.)*

After the war Huynh Cong 'Nick' Ut began a search for the remaining material. Working temporarily in the Tokyo AP office from 1975 - 1977 he found a small selection of prints and nineteen original negatives - material that somehow ended up in Tokyo. He now has both in his private collection. The negatives and prints show some of the military operations on the same day, before the "Kim Phúc incident" and add important information to the basic material in the AP Photo Library."[9]

STORYBOARD FOR AN AIR STRIKE: Broadcast television news footage of the same event provides us with an altogether different angle on the bombing, which in particular highlights the preemptive nature of documentary reportage.[10] Unlike the distilled emotive scene figured in Ut's singular B&W image, the colour moving images tell a story of soldiers and journalists lying-in-wait for an aerial attack with their camera's poised for action. News of a possible air strike had been made known in advance and reporters were dutifully dispatched from Saigon to cover the unfolding events. As the first napalm flares ricochet off the ground, creating bilious clouds of dense black smoke, a soldier with his camera turned towards the bombing is seen standing in the middle of the road in observation. Out of this smouldering inferno a group of Vietnamese villagers come running, one young girl is entirely naked and as she passes the cameraman we can see ragged sections of her charred skin flaking off as she runs. Her eyes and those of the other fleeing children flicker briefly towards this photographer indicating that they are aware of his curious presence but then quickly turn away to continue running.

[9] Pyle, "Trang Bang Revisited (Excerpts)." P. 2.
[10] This television news footage is included in the documentary Hearts and Minds, dir. Peter Davis, Rialto, 1974.

Eventually she comes to a stop and two watching soldiers empty their canteens of water across her back to dowse the chemical burns.

→ O201 / O202 → FILM O203 NAPALM ATTACK

This film footage makes perversely explicit the various roles that war assigns to each of its actors or agents in its diegetic unfolding. Even the victim, it suggests, has an a priori role to play. As if on cue, Phúc and the villagers emerge out of the exploding backdrop to run towards the waiting soldiers and a photographer who is able to shoot a remarkable number of 240 frames. The maximal impact of the singular image is diffused throughout this sequence of moving images for two primary reasons. Firstly because we are given access to the moments that both preceded and followed the iconic image-event, none of which seem to equal the forcefield of intensities operative in the B&W photograph; and secondly because we are permitted to see the photographers who are on-assignment, which is to say, simply doing their job. The workmanlike quality of the scene recalls Hannah Arendt's detailed descriptions of the Eichmann trial in Jerusalem and her famous treatise on the "banality of evil." Surely it is this perfunctory dimension that is far more terrifying than the unmediated transparency of Ut's photograph as a visceral capture of the horrors of war.

THE 'DECISIVE' MOMENT: Several years ago the San Francisco MoMA curated an exhibition, which included Dorothea Lange's iconic depression-era image "Migrant Mother" shot in 1936. As one of the official photographers of the Farm Security Administration (FSA 1935-44), Lange travelled throughout rural California documenting the impoverished conditions of migrant agricultural workers and their families. At a pea picker's camp in Nipomo she came across a destitute thirty-two year old woman with her seven hungry children and approached her. The result of this encounter would eventually convert the woman and her tired poverty into one of the most lionized images of early 20th century photography in the West. As is so often the case with documentary realism, the subject of these images remains anonymous and the photographer [Lange] conspicuously absent from the scene. Photo-historian Abigail Solomon-Godeau contends that the triangulation between the optics of the photographer, camera, and spectator machines a spatial intimacy between the image and its material substrate that confers an immanent form of "pure presence" that necessarily negates the intercessions of the photographer. The "photograph appears to be self-generated—as though it had created itself."[11] She writes:

"This structural congruence of point of view (the eye of the photographer, the eye of the camera, and the spectator's eye) confers on the photograph a quality of pure, but delusory, presentness. A photograph, as Victor Burgin once remarked, is an offer that cannot be refused. Moreover, unlike hand-made images in which the depicted image lies on the surface of the paper or canvas, the image in a photograph appears to be *in* it, inseparable from its ground; conceptually, you cannot lift the image from its material base. Phenomenologically, the photograph registers as pure image, and it is by virtue of this effect that we commonly ascribe to photography the mythic value of transparency."[12]

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[11] Abigail Solomon-Godeau, Photography at the Dock: Essays on Photographic History, Institutions, and Practices (Minneapolis: University of Minnesota Press, 1991). P. 180.
[12] Solomon-Godeau, Photography at the Dock: Essays on Photographic History, Institutions, and Practices. P. 180.

In recalling this event, Lange suggests that a strange form of parity seemed to structure the relationship between herself and her subject matter. A transaction she frames as one of helping each other. "There she sat in that lean-to tent with her children huddled around her, and seemed to know that my pictures might help her, and so she helped me. There was a sort of equality about it." Certainly the FSA photographers did bring into public consciousness the widespread effects of rural poverty and Lange's images surely trafficked in the same discourse of empathy that the FSA images collectively engendered. However, unlike the critique of dispassionate self-interest that was levelled at Carter for not immediately putting down his camera to try and save the dying child in Sudan in 1993, neither Lange nor Ut were subjected to public condemnation for shooting a photograph during a moment of intensive despair.

In the case of Carter's image what has ultimately substituted for and even amplified its affective content is the parallel story of his suicide in 1994 shortly after winning the Pulitzer. "The force was centrifugal. Unable to cope with the demands of his simultaneous celebrity and vilification, the fragile photographer was drawn into a psychological maelstrom."[13] This tragic outcome effortlessly maps onto the discourse of public infamy that attended the photograph's publication as evidence not only of Carter's journalistic verve, but also and more significantly, of his opportunistic disregard for human life. Ut himself was also momentarily conflicted as to whether he should take precious time out from his AP filing deadline to find medical help for Phúc in Saigon. The idea that an image and the moral outrage that its taking ignited could push a photographer towards his own death exceeded even the traumatic threshold of a dying child. Even though Carter had a troubled history and had previously sought solace in his drug habit, as a member of the Bang-Bang Club of South African photojournalists he had confronted and documented many acts of extreme violence and oppression, but the notoriety surrounding the publication of the Sudanese image finally unravelled his already weak equilibrium.[14] As a photographer Carter's job, like that of all photojournalists, was to create images that would circulate within public media systems under the banner of the "greater good", a transmissional regime that necessarily universalises individual trauma in order to yoke its image-cathexis to that of collective plight with the intention of securing a sympathetic response.[15] Documentary photography relies upon the overcoding of the image, which it understands as a form of enunciatory excess or an emotive supplement, that allows its affective capacities to be more widely distributed and reattached to other emergent image-events.

TIRED IMAGES: Yet as artist Martha Rosler has succinctly critiqued in her writing on documentary photography: "Imperialism breeds an imperialist sensibility in all phases of cultural life. A safari of images" that necessarily disavows any representational agency on the

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[13] Okwui Enwezor, Snap Judgments: New Positions in Contemporary African Photography (New York: Steidl Publishing, 2006). P. 18.
[14] See Greg Marinovich and Joa o Silva, The Bang-Bang Club (London: Heinemann, 2000). See also the documentary film The Death of Kevin Carter, dir. Dan Krauss, HBO, 2004.
[15] See also a related discussion on the changing agency of media images in human rights discourse by Thomas Keenan, "Mobilizing Shame," The South Atlantic Quarterly 103.2/3 (2004).

part of those who are subjectivsed by its dominant image traditions, notably those forged within Western pictorial canons.[16] Okwui Enwezor forwards a related argument when he asks whether the status of the human as an embodied subject who has "personhood" can ever be attached to photographs such as that taken by Carter, given the numbing proliferation of images of suffering that have been transmitted from Africa since colonial photography's first incursions into the continent. Negative images abound, short-circuiting any alternate vision of Africans as fully formed subjects with their personhood intact. Even "affect" he seems to suggest is no longer readily available within the documentary image discourse of Africa which he argues has induced a kind of poverty fatigue on the part of its recipient viewers although no evidence specifically supports this position. Positive images of Africa he contends remain elusive within the turbulent image flows that have washed over the Atlantic to arrive in the West this past 150 years. In his curatorial essay for the exhibition *Snap Judgments: New Positions in Contemporary African Photography*, Enwezor questions whether this form of image anomie, which he calls "Afro-pessimism" can be overcome and if so by what means?[17] Afro-pessimism refers to a form of documentary reportage that insists upon seeing Africa through the lens of constant peril and strife. In this tradition, which Enwezor argues is fundamentally Western in its ideological orientation, the disenfranchised are pictured in desperate need of assistance requiring the intercessions of an external agent to relieve their anguish and impoverished living conditions. Both Carter and Ut's photographs testify to this perceived condition of vulnerability, which is all the more poignant because it is located within the representations of a child that is already coded as defenceless and speechless. Only through photographic mediation can these subjects seemingly be brought back from the brink of death to speak their suffering, a situation that confers on the photographer the power of bestowing 'life'. Agency is once again siphoned off the artefact and resutured to its human agent.

"These images raise serious issues about the nature of photography, representation, and the ethics of media reporting in Africa. Their proliferation numbs the mind, to the point of glaucoma... Central to the questions raised by images of calamity, beyond the immediate sorrow of witnessing dreadful scenes of the emptying of African life, is the relationship between photographer and subject. This question loomed large in the reception and discussions of Carter's Sudanese child. What is the photographer's ethical responsibility to the vulnerable subject? Is a living corpse, such as the image of the Sudanese child suggests, capable of being a proper subject? Can photography itself breath life into this lifeless body in order to win it recognition as to be counted among the living? In short, can Carter's picture confer on this nameless child the status of personhood? These questions are raised here not only in relation to the image but in recognition of a broader debate directed at reaching an equilibrium between pictorial concern and violence in representation."[18]

→ J101

For Enwezor, the shock of Carter's image turns on its representation of the child as a "living corpse" reduced to mere carrion for the vulture[s] that lie-in-wait for her perishing. Images such as these literally 'feed' Western global media networks that are much more vampiric in their blood-thirst than the bird that stalks its prey for purposes of sustenance. Because the

[16] Martha Rosler, "In, around, and Afterthoughts (on Documentary Photography)," Martha Rosler: 3 Works (Halifax: Press of the Nova Scotia College of Art & Design, 1981). P. 78.
[17] See "The Uses of Afro-Pessimism," in Enwezor, Snap Judgments: New Positions in Contemporary African Photography. P. 11.
[18] Enwezor, Snap Judgments: New Positions in Contemporary African Photography. P. 18.

child is incapable of speaking for herself as an embodied and vital subject in the world she, like Phúc, becomes a symbolic site of transaction in which her extreme helplessness and explicit muteness is ventriloquised by the photographer and/or media context in which the photograph circulates to be recoupled with other representational economies. A cynical reading might claim that such an image gains its affective purchase only retroactively, that is after-the-fact of its transmission and integration into a system of intelligibility, in which the photographer or media network and not the dying child ultimately has the final say.

→ VIDEO C103 THE DEATH OF KEVIN CARTER

MULTIPLE EXPOSURES: Returning briefly to MoMA's exhibition, what was unusual about this particular curatorial project was the unprecedented inclusion of five other photographs printed from the same sequence of Lange's negatives collectively called the "Migrant Agricultural Worker's Family". With the addition of these "out-takes" we as viewers and readers of history, were provided with a somewhat different insight or point of view into the event depicted. Although the existence and juxtaposition of other images on a roll of film obviously comes as no surprise, it does remind us that the gap between the general image-making operations of the camera and the transmissional system that brings an individual photograph into public circulation and ideally public awareness is always one of radical disjunction and not mediation between the event-perceived as an image-flow and the event received as an image-capture. Moreover the chemical vagaries that came into play during the development and printing process also factor into this dynamic relationship, as do the intercessions of light, technical equipment, and darkroom expertise to name but a few. The point is not to rehearse the contestation of photography's truth campaigns (a debate that is already fully crafted and critically mapped) but rather to further annotate Massumi's argument in stressing that media transmission must therefore be conceptualised as the becoming of a *specific* kind of event.

→ 0204

IMAGE LOSS: The existence of 240 exposures on Ut's eight rolls of film is a virtual archive out of which any image could have been extracted and realised; its initial actualisation occurring at the level of its objectness through its chemical development and printing; and then again in its reactualised form as a mediatic event via its electronic scanning and telephonic transmission. As such the remaining 239 outtakes provide the contextual baseline out of which a singular artefact was extruded and sonically emitted into history as an emblematic trace. But as Raymond Williams already alerted us to in *Chapter One: Archival Futures* what is chosen as significant—worthy of record—is always a deliberately selective process. How then do we repoliticize the memory traces of images that are forgotten, lost, or were never selected for tele-transmission and thus exist solely within the register of the virtual? Or should the virtual, be conceived as an image-storehouse, always-already political in the Heideggerian sense of a politics "standing in reserve"? As this thesis chapter unfolds we will see that the particularity of the image shot by Ut and chosen by AP editor Faas catalysed a series of transnational events (protests, discussions, controversies) with respect to the anti-war movement, US foreign policy, as well as increased North Vietnamese agitation and opposition to Western incursions

into South-east Asia. The photograph of Phúc was ultimately *the* out-take that mattered, one, which continued to exert its influence well into the 1980s.[19] Today it finds renewed expression within this text but more importantly with the digital image files flowing out of Iraq and Afghanistan depicting civilian tragedies and a growing humanitarian crisis.[20]

Informing Matter

PROTO-DIGITAL: Before the advent of the digital, the technical procedures of the Muirhead K220 Picture Transmitter had already implemented the kind of data-processing system that we now associate with the numeric sequencing of binary code and the relay of digital informatics. In translating an analogue visual representation [the photographic paper print] into quantitative acoustic data [electrical impulses] the Muirhead performed the fundamental operations of the digital. It measured the tonal variations of the photograph by calculating the relative intensity of each grain's luminescence and then calibrated the machine to send out a sequence of discrete audio signals that could map out the exact distribution, location, and gradient levels of the image's original data, thus transforming the materiality of the object into a set of mathematically derived calculations.

PHATIC BYTES: In an article on affective labour, sociologist Patricia Ticineto Clough and her graduate students at CUNY discuss a shift in the ways in which information is now being thought within physics and the life sciences as subject to the same kinds of affordances that shape organic matter, in effect, producing an ontology of shared attributes. Information, like organic matter, too is capable of "self-forming" and "engaging in self-measurement" thus conferring onto information the status of a quasi-material reality.[21] Bruno Latour makes a somewhat related move in his work on the "parliament of things" wherein he grants the standing of the quasi-object to hybrid entities such as genetic engineering technologies and more famously to the hole in the ozone layer. As the depletion of the ozone shield decreases, the significance of the hole as a thing increases. It becomes something that we must contend with, not because of its rhetorical presence within debates around climate change, but because of its physical absence. Its abeyance from the chemical cosmology in which it was initially produced doesn't negate its physical attributes but merely relocates the apparent immateriality

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[19] Marita Sturken argues that until the opening of the Vietnam Veteran's Memorial in Washington, DC on November 13 1982 there was no space for collective public mourning with regards to the Vietnam War. Up until that time, the war remained a source of private and internalised personal trauma. What the monument, designed amidst fierce controversy by Maya Lin, provided was a mechanism for the US to publicly begin to articulate and account for the events of the war and its aftermath. Kim Phúc, who is now living in Canada, has become one of the key witnesses for this process of public accountability and remembrance. See Marita Sturken, Tangled Memories: The Vietnam War, the Aids Epidemic, and the Politics of Remembering (Berkeley: University of California Press, 1997).

[20] At the time of this thesis chapter rewrite, January 2009, additional crisis-born images are coursing through the blood-soaked media arteries reporting from Gaza as the ground war between Hamas militants and an IDF intent on inflicting maximal reciprocal damage is waged with a trapped Palestinian population paying a radically disproportionate price in the growing death toll.

[21] Patricia Ticineto Clough, Greg Goldberg, Rachel Schiff, Aaron Weeks and Craig Willse, "Notes Towards a Theory of Affect-Itself," Ephemera: Theory & Politics in Organization 7-1.Immaterial and Affective Labour: Explored (2007).

of the hole to the domain of a new conceptualisation of matter, which is to say that of anti-matter. Likewise the reconceptualisation of information as itself a new form of matter becomes crucial to my project, because it recognises that the conversion of matter into pure data is not simply a process of dematerialisation that can be neatly figured onto the category of the digital (as is suggested by many accounts of computational media), but is rather a provocation for thinking materiality differently: for thinking the digital analogically. This view regards information as possessing many of the autopoietic attributes, such as self-modification, that have traditionally been assigned to the category of organic and physical systems. In order to elaborate their argument, Clough references the work of George Caffentzis on the mathematics and science of measure as regards an analysis of labour, energy, and value.

"Caffentzis argues that thermodynamics was *the* science informing Marx's theorization of abstract labor power as the potential energies of workers abstracted to hours of expended energy in the production of surplus value. About thermodynamics Caffentzis concludes: "physics... provides definite analyses of work and new plans for its organization. Its models may appear abstract, but they are directly related to the labor process" (Caffentzis, 1992: 220). In underscoring the relationship of measure, value and science, Caffentzis inspires us to rethink affective labor in terms of the sciences that have informed contemporary understandings of affect. Following Caffentzis's turn to the science of thermodynamics for an understanding of the processes of generating and measuring value, we offer a set of notes about value, labor, measurement and affect in relationship to information theory being developed in physics and the life sciences (especially biology). In these sciences, information is understood as a capacity of matter to self-form and to engage in self-measurement; information is itself, along with matter and energy, presumed to be physical."[22]

The notion of information as subject to its own forms of individuation, mutation, and becoming aligns it with a more complicated formulation of the analogue-digital relation that I discussed briefly in the *Introduction* and which I will return to later in this thesis chapter, one which re-examines the analogue through its prospective entanglement with digital images yet-to-come. Suffice to say at this point, that thinking information in terms of its 'physical' attributes—its capacity to engage in processes of feedback and thus self-transformation—will help us to work through Massumi's idea of "transmission as that which induces the event" beyond the automated register of the calculative as merely causally deterministic. How do different modes of transmission intensify connections between objects and events? How does a signal exert its modulating influence to reshape a past or future event? Can we think transmission not simply as a form communication technology but as a technology of continuous self-forming and deforming which in turn might also reformat the events that it induces?

IMPURE IMAGES: During the Vietnam War critical news photos such as that taken by Ut were usually sent by shortwave radio-transmitters, a process that was relatively expedient, taking on average only 12 minutes to scan and send an image. However the radio waves emitted by these devices were subject to many variables including the consistency of its fluctuating electronic current and perhaps even more importantly the stability of weather systems. The Muirhead Picture Transmitter was designed to reassemble its image-data according to

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[22] Clough, Goldberg, Schiff, Weeks and Willse, "Notes Towards a Theory of Affect-Itself." P. 61. See also George Caffentzis, "Why Machines Cannot Create Value; or, Marx's Theory of Machines," Cutting Edge: Technology, Information, Capitalism, and Social Revolution, eds. J. Davis, T. Hirschl and M. Stacks (London: Verso, 1997).

predetermined patterning sequences, however the potential for signal-relay complications due to interference from inclement weather or over-loaded telephone transmission lines was not infrequent. Consequently the information sent was not necessarily contiguous with the information received. When meteorological events interfere with the integrity of signal transmission they feed physical phenomena back into the image-making process, arguably tampering with the data at the microscale of its technical assembly, creating what might be termed "impure images". Weather patterns in entering into a feedback loop with the machine's transmissions become coterminous with the induction of the event. Which is to say that even something as seemingly immaterial as air turbulence should be regarded as fundamentally entangled with the generative constitution of Ut's image of Phúc. Although such variations are imperceptible to the human eye, they none the less remind us that information, like organic matter, is also subject to the dynamism of chance events and uncertainties.

In Paul Virilio's book *War and Cinema* (1989), he quotes a US fighter pilot, Colonel Broughton who experienced similar transmission difficulties in Vietnam as radio chatter and rough weather cluttered the airwaves making communication highly unreliable and increasing the risk of payload miscalculations with often-tragic consequences.

"The radio chatter was really picking up about this time—in fact, it was so dense with all the mig and Sam warnings and everyone shouting directions and commands that it was almost impossible to interpret what was going on. This is a real problem and once it starts, it just keeps getting worse and worse and is almost impossible to stop. . . you see something that you know you have to tell other people about in a desperate hurry to protect them and to protect yourself, and the temptation is to blurt out as quickly as possible without using the proper call sign. The result is that everyone in the air immediately gets a shot of confusion and wonders who is talking about whom . . . you have no idea where you are."[23]

If the weather had been inclement on June 8 1972 might I be writing about an altogether different image as each day of warfare in Vietnam produced thousands of negatives from which to select? Ut's photograph and its tele-transmission cut this virtual flow of images as his photo of Phúc became the defining image of its time, precluding the necessity for any other image evidence of the 'mistake' that had become Vietnam for the US.

MACHINING DEVIANCE: An understanding of information as 'physical' to the extent that it participates in and is affected by autopoietic or self-forming processes allows us to bypass the normative circuits of a logic that regards machinic matter and its transmissional procedures as entirely automated, without differentiation. Even though both Shannon and more explicitly Marshall McLuhan evacuated rhetorical content from media transmission, they conceded that the conditions governing the relay of information (its susceptibility to interference for example) actively contributed to its own refashioning. Attentiveness to each transmission's contingencies in terms of its entanglement with the various environments through which it moves permits a more nuanced analysis, one that is not beholden to the generalised laws of instrumental behaviour that exclude processes of deviant machinic vitality. Diverging somewhat from

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[23] Colonel Jack Broughton cited in Paul Virilio, War and Cinema: The Logics of Perception, trans. Patrick Camiller (London: Verso, 1989). P. 84.

Shannon's conviction of the purity of the signal (see *Introduction*) this thesis argues that informatic transmission, which moves internally through the material substrates of the machine as well as externally through air and radio frequency channels, is at every moment subject to micro-modulation and modification by its circulation and transit through the technical organs of the machinic assemblage. Norbert Wiener called such deviations in transmission "noise", which he regarded as detrimental to the probability function of message relay (choosing one message amongst a range of possibilities), equating it with entropy.[24] He insisted that information control was necessary to maintaining the stability of signalling regimes, which were continually under threat by the disorderly conduct of noise. The more the flow of information could be controlled within a given system the less entropy. "The physical functioning of the living individual and operation of communication machines is parallel in their analogous attempts to control entropy through feedback."[25] For Shannon and Warren Weaver on the other hand, information transfer was an autonomous activity. Everything coming through the channel was information including noise. Information as such is reliant upon both "predictability and unpredictably, pattern and randomness."[26]

According to Weaver who co-authored aspects of Shannon's information theory, mutations in the transmission of the message are not antagonistic but crucial for systems to evolve in new directions. This idea is particularly significant with respect to the informatic transmissions of the Muirhead and its capacity to machine new events. "Mutations normally occur when some random event (for example, a burst of radiation or a coding error) disrupts an existing pattern and something else is put in its place instead. . . The randomness to which the mutation testifies is implicit in the very idea of pattern for only against the background of non-pattern can pattern emerge."[27] Gregory Bateson reworked these ideas two decades later in *Further Steps to Ecology of Mind* (1972) wherein he coined the well-known phrase "information is a difference that makes a difference." The more unlikely or random the event, the more information it contains.[28] For example, to say that it is raining in London is not as content-rich as saying it is snowing in Saigon. The quantity of information a message contains is directly proportionate to the amount of difference it communicates. This is called a "surprisal" and holds out much expressive potential for my work, in that, it stresses the "anomalous" as the locus of intensified creativity. *(See Glossary entry Machinic Agency for an extended discussion on autopoiesis and a rethinking of information as new form of vital matter.)*

→ M102 MACHINIC AGENCY

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[24] See *Chapter One: Archival Futures*. Theoretical physicist Ludwig Boltzmann (1872) in examining the kinetic theory of gases generalized entropy as a 'probability function' wherein entropy was understood as a measure of randomness. Boltzmann's reformulation of the second law of thermodynamics permitted entropy to be linked with a system [information] that had nothing to with the heat engines.
[25] Norbert Wiener, "Cybernetics in History," Theorizing Communication: Readings across Traditions, eds. Robert T. Craig and Heidi L. Muller (London: SAGE, 2007).
[26] N. Katherine Hayles, How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics (Chicago: University of Chicago Press, 1999). P. 32.
[27] Hayles, How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics. Pp. 32-33.
[28] Hayles, How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics. P. 102.

ADAPTIVE OPTICS: The telephonic transmission of images requires the conversion of vision into sound, a transmutation of the photographic body in which the ear/scanning drum sees what the camera's eye has already heard. "What can't be coded can be decorded if an ear aye seize what no eye ere grieved for."[29] New modes of media delivery necessarily realign the perceptual organs that we use to make sense of incoming data: "fragmenting" the human sensorium and "redistributing" it as a multiplicity of particularised and automatic functions.[30] With the invention of the telescope in 1609 for example, vision became denatured, as the modalities of seeing were no longer governed by the unaided capacities of the human eye but by technology's facility to enhance the body prosthetically. However as science historian Timothy Lenoir notes this conjunction between technology and the human must be understood not merely as a form of augmentation that aids human capacities such as vision, but as a fundamental agent in the transformation of the human itself. In as much as the telescope extends human sight, the far-distant world perceived through its lens, is returned to the viewing subject as light rays, which press up against its retina and intervene in its standard optical procedures. The telescope in viewing remote objects must gather more visible light than is 'naturally' possible by the human eye thus producing a kind of adaptive optics which in turn changes the actual chemistry of the eye's retinal cells in order for it to process more incoming light waves. "Discussions of hybrid human-machine interactions have tended to see the material, machinic components on the other side of the cyborg interface as "enhancements", extensions, or reconfigurations of the senses; the machine extends anthropomorphically, rather than fundamentally remaking the human."[31]

REMOTE SENSING: The accuracy of the representations that flowed back through the monocular of the telescope to the receiving eye, like many contemporary image-producing technologies, relied upon the precise entanglement of human perceptual systems with the working mechanisms of the machine creating a variant of the machinic assemblage. Today software technologies control low-level surveillance systems and conduct image-analysis without any direct involvement of the human eye. By setting certain parameters as to 'normative' behavioural patterns, these programmes monitor and sift through data looking for anomalies in the speed and movement trajectories of its digital subjects. The sheer scale of footage generated by CCTV cameras in a city like London (there are reportedly 4.2 million CCTV cameras in the UK or 20% of the world's total) in which everyone is said to be monitored at least 300 times daily, makes it literally impossible for humans to watch, let alone analyse, the mass proliferation of data produced. Rather than modify or supplement human vision, these computational systems perform "low risk seeing" as a series of automated tasks that the human would likely not execute effectively given the highly repetitive and mundane nature of

[29] James Joyce, Finnegans Wake (Middlesex: Penguin, 1976). P. 482.
[30] See John Johnston, "Machinic Vision," Critical Inquiry 26.1 (1999).
[31] Timothy Lenoir, "Makeover: Writing the Body into the Posthuman Technoscape Part Two: Corporeal Axiomatics," Configurations 10 (2002). Pp. 373-4.

this form of looking. Seeing, even in its prosthetically enhanced form, no longer belongs to the exclusive jurisdiction of living organisms. With the inauguration of the digital it would seem that the calculative functions of the machine could be applied to all manner of adaptive perception from the touch of haptic technologies to the audition and vision of remote sensing. This is of course the legacy of British mathematician Alan Turing's fantasy of the universal machine.[32]

MACHINIC VISION: Cultural theorist John Johnson shifts the contention (following Shannon and McLuhan) that information relay or transmission processes are devoid of embedded content into the digital realm and reapplies it to processes of machine seeing. Digitality deterritorialises perception he writes, "a freeing not only of the thing seen, but the act of seeing itself from any specific content or purpose."[33] Following Gilles Deleuze, he develops the idea of "machinic vision" which he states "is not so much a simple seeing with or by means of machines—although it does presuppose this—as it is a decoded seeing, a becoming of perception in relation to machines that necessarily also involves a recoding."[34] In the case of the Muirhead, a machine that we have already suggested shares certain affinities with the digital, seeing became an extension of hearing which itself was a machinic by-product of not only vision but also touch. For the Picture Transmitter to quantify its data, it literally had to press itself against the surface of the print in order to record its luminal imprint. The ontologic reality of Ut's image was therefore no longer guaranteed by the visual regime of the human eye and optics of the camera but required the intercession of a machine that could both feel and hear.

FELT-SIGHT: The sonic transmissions of the Muirhead K220 from Saigon that day in 1972 were received as a kind of collective body-blow, an impact upon the retina of a viewing populace, that immediately rewired its carnal receptors. Eyes turned into angered speech and public protest, and ears into vision haunted by the silent screams of the fleeing villagers and the sounds of dropping bombs. It was as if the eardrum of the machine itself both saw and felt the horror of the attack and channelled these reverberations through the perceptual apparatus of the transmitter into the body-public. "This iconic photo was capable of activating public conscience at the time because it provided an embodied transcription of important features of

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[32] In 1950 Turing published his landmark paper "Computer Machinery and Intelligence" in which he proposed an experiment, *The Turing Test,* to determine whether "machines could think".[32] Developed as a series of questions addressed to both a human being and a computer, the test would either highlight or erase the differences between them depending upon the nature of each entity's response. "If you cannot tell the intelligent machine from the intelligent human, your failure proves, Turing argued, that machines can think."[32] Unlike the machines of the industrial revolution which operated according to the laws of physics with their levers, pulleys, and cogs, the machine that interested Turing was one which operated according to mathematical principles and relied upon the organisation and processing of information. Shannon had already defined information as a pure "probability function" without any signifying dimensions or content. Transmission merely dispatches electronic pulses between points, which stand in the place of a message. For Shannon meaning was always generated retroactively when the signal was recombined with an interface capable of organising its data abstractions into meaningful patterns. With such a definition of information in place Turing could now make the necessary conceptual moves that would unhinge consciousness from the transactions of informatic relay—a communicative process that could be handled effectively by either a human being or a machine.

[33] Johnston, "Machinic Vision." P. 28.

[34] Johnston, "Machinic Vision." P. 29.

moral life, including pain, fragmentation, nodal relationships amongst strangers, betrayal, and trauma."[35] Sound and image did not simply converge but become the constitutive force for the other's emergence in the summer of 1972.

Virilio has argued that the "the fusion-confusion of the eye and camera lens" in the late nineteenth and early twentieth century inaugurated a shift in the visual regime from "substantial to accidental vision" as the various systems of "message-intensification" produced by the emergent mass media technologies of photography, cinema, and radio began to interpenetrate our perceptual domains, overlaying new signs and sounds.[36] Friedrich Kittler has referred to this technical dispersal as "the splitting of the data stream" in which the invention of distinct technical machines for speaking, hearing, writing, reading, and seeing "broke apart the *Bildung*" or total picture that had previously located its cultural coherency within the unified technical operations of the human sensing machine.[37] Such cognitive confusion between separate technical media at the turn of the last century would, over time, achieve clarity and wholeness once again as these new modes of perceptual fragmentation and superimposition were systematically decoded and reunited under the universalising programme of "digital convergence". Fusion replaced confusion, as computation covered over the very differences that were foundational to discrete media machines like the camera, phonograph, typewriter, and telephone. Today's computers have become the skeuomorphs par excellence in their digital mimicry of the analogue from which their performances are largely derived.

What is of interest here however (with respect to the Muirhead) is not the digital's 'descent' from the analogue, nor the increasing biotechnical convergence between humans and machines, but rather the entangled assemblage in which distinct machinic attributes and functions are able to retain their expressive singularity while simultaneously participating in acts of collective enunciation and incorporeal transformation. "We think the material or machinic aspect of assemblage relates not to the production of goods but rather to a precise state of intermingling bodies in a society, including all the attractions and repulsions, sympathies and antipathies, alterations, amalgamations, penetrations, and expansions that affect bodies of all kinds in their relations to one another."[38]

ELECTRIC ORGANS: If it is the particular ways in which certain technical objects come together with other machinic entities that ultimately matters, then what is at stake when confusion [not convergence] arises between organisational systems that traditionally maintained their discretionary distance: sonic and visual? In his text *Francis Bacon: The Logic of Sensation* Deleuze discusses the notion of "an indeterminate organ" as that which characterises the body without organs (BwO) suggesting that the BwO is not lacking organs

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[35] Robert Hariman and John Louis Lucaites, No Caption Needed: Iconic Photographs, Public Culture, and Liberal Democracy (London: University of Chicago Press, 2007). P. 175.
[36] Paul Virilio, The Vision Machine, trans. Julie Rose, Perspectives (London: British Film Institute, 1994).
[37] See Johnston, "Machinic Vision." P. 32.
[38] Gilles Deleuze and Félix Guattari, A Thousand Plateaus: Capitalism and Schizophrenia, trans. Brian Massumi (London: Continuum, 1988). P. 90.

per se but rather that it lacks a "particular organisation of organs". In 'fleshing' out this idea he prophetically invokes the technical operations of Muirhead Picture Phone. Deleuze writes:

"A wave with a variable amplitude flows through the body without organs; it traces zones and levels on this body according to the variations of its amplitude. When the wave encounters external forces at a particular level, a sensation appears. An organ will be determined by this encounter, but it is a provisional organ that endures only as long as the passage of the wave and the action of the force, and which will be displaced in order to be posited elsewhere."[39]

With minimal textual arbitration this passage can be reformatted to illustrate the ways in which the Muirhead's photoelectric cells measure the intensity of light and transform this incandescent energy into an electric current that can be transmitted.

A photoelectric light wave with a variable amplitude flows through the machine; it traces luminal zones and levels on this photographic body according to the variations of its grain patterns. When the light wave is translated into external sonic forces at a particular level, a sensation appears. A perceptual organ will be determined by this encounter, but it is a provisional organ that endures only as long as the passage of the wave and the action of the force, and which will be displaced in order to be posited elsewhere.

When the articulating modalities of the machine releases a sound wave or transmits an image file it has the capacity to produce an intensive response in the body of the recipient, or in the case of the Muirhead K220 in that of the body-public. The moment at which the intensity of this image or audio track encounters a receptor body its generates a provisional sensing organ, but it does not, as Deleuze suggests, treat the eye or ear as a fixed organ. Sensations create polyvalent and transient organs, given that the machine triggers eyes and ears all over: "in the ear, in the stomach, in the lungs." Subjectively, the virtuality of the image or sound invents a new perceptual organ each time the Muirhead releases a new object that we may call the eye or ear, but objectively "it brings before us the reality of a body . . . [a]nd each is produced by the other: the pure presence of the body becomes visible at the same time that the eye [and ear] becomes the destined organ of this presence."[40]

Voiceovers

"It is as if, speech having withdraw from image to become founding act, the image, for its part, raised the foundations of space, the 'strata', those silent powers of before or after speech, before or after man. The visual image becomes *archaeological, stratigraphic, tectonic.* Not that we are taken back to prehistory (there is an archaeology of the present), but to the deserted layers of our time which bury our phantoms; to the lacunary layers which we juxtaposed according to variable orientations and connections."[41]

A SOUND QUESTION: Does the redistribution of the machine's sensing mechanisms produce a new kind of perceptual machine capable of generating new conceptual experiences? The Muirhead K220 Picture Transmitter collapsed the optical and aural regime of two machines, the

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[39] Gilles Deleuze, Francis Bacon and the Logic of Sensation (London: Continuum, 2004). P. 47.
[40] Deleuze, Francis Bacon and the Logic of Sensation. P. 52.
[41] Gilles Deleuze, Cinema 2: The Time Image, trans. Hugh Tomlinson and Barbara Habberjam (London: Continuum, 1989). P. 243-244.

camera and the telephone, that had previously maintained their functional distinction. While the advent of synchronized sound in cinema during the late 1920s reconnected the body with the ventriloquised voice of the subtitle, the transmission of the voice through the telephone (in the early years of its inception) reinstantiated a culture of distance. This historical gap between sound and image accrues differently when we consider once again the B&W image of Phúc in contradistinction to that of the moving film footage.

SPEAKING FOR: In the still image sound is represented by the gaping open mouth of the little girl as she tries to flee the firestorm that has ignited around her. The image is silent but expressive in its visual capacities to generate the acoustic "affect" of terror. Her "missing voice" is ultimately repatriated by the Muirhead as the generative force by which the photograph was to achieve its public coherency, namely through its telephonic relay. Whereas in the documentary film footage it is the amplified sounds of the falling bombs that dominate the imagetrack. This time the voice of Phúc is not so much silent as it is rendered inaudible because of the massive [sonic] attack of exploding napalm. In both cases however, we are returned to a politics of the image in which the subject, to a large degree, is "spoken-for" by various sound producing and sound imaging machines: cameras, transmitters, and warplanes. What is of relevance in trying to "locate" the space of sound in this famous scene as it was both captured and transmitted by the Muirhead is that the affective residue of Phúc's voice still manages, in its 'muteness', to register across different domains. Somehow we are able to access the sonic virtualities latent in the image and actualise them as felt-sounds within our own receptor bodies. Not a cancellation of the human voice as sutured to an indexical image but rather a "freeing" of sound that also allows it to entangle itself with other and coming events. The cinematic apparatus in contrast brings the actual diegetic sound of the air strike into the visual playing field of the image where it is experienced in its immediacy as a continual perceptual flow that washes over the viewer. The connection of documentary film to the virtual is extremely weak because its authority rests on its abilities to anchor the event pictured as emphatically real—this actually happened then. It leaves little residual affect to be repotentialised in the future, although this assertion will be troubled somewhat in *Chapter Three: Radiological Events* when examining the film footage shot at Chernobyl. But in the case of the latter, it is the radioactive isotopes that inscribed themselves directly into the emulsive layers of the film that provide the source for its ongoing virtuality. Of course the legitimacy of photojournalism also turns on its "authenticity effect" but it does not perform the illusion of dynamic movement that allows it [cinema] to be returned to the viewer as a complete and reparative experience.[42]

"More is at issue here than the recovery of the object [the mute filmic subject]. When the voice is identified in this way with presence, it is given the imaginary power to place not only sounds but meaning in the here and now. In other words, it is understood as closing the gap between signifier and signified."[43]

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[42] In its classic narrative formulation (a mode of representation in which editing, camera, and sound all work together to create coherency) unity and wholeness are returned to the viewing subject, whose own fractured self-image is repaired, by the suturing agent of cinema.

[43] Kaja Silverman, The Acoustic Mirror: The Female Voice in Psychoanalysis and Cinema (Bloomington: Indiana University Press, 1988). P. 43.

TALKIES: While cinema can testify equally to the Benjaminian notion of fragmentation and dissonance characteristic of the modern era through its operations of cutting, editing, montage, and intertextuality, a certain fundamental continuity still underwrites its project. Regardless of film's amenability towards image and sound manipulation, conventional film stock is a processional strip of celluloid-encoded information that runs through the projector one frame after another at the steady rate of 24 fps. As Kaja Silverman suggests in the preceding quotation, the desire to reunite sound and image, which is one of the foundational fantasies of early cinema, not only overcomes the rupture that is archived on the film strip itself—the gap between frames—but also that between presence and absence. Even the strategies of defamiliarisation pursued by avant-garde filmmakers could not entirely wrestle the power of the voice away from the image. As Slavoj Zizek suggests *in A Pervert's Guide to Cinema*, the human voice that speaks even when no longer anchored within a physical body has the uncanny ability to enter into our own bodies as an "alien-other" that we are unable to exorcise. The voice always finds a host-body to inhabit. Sound contaminates the body differently than the image, precisely because of its lack of discretion; it has no edges that we can grasp in order to place it in such and such a location. Its psycho-acousmatic dimensions unsettle spatial boundaries between objects and events as sound moves into the deep tissue-space of the interiority of the body, whereas the idealisation of the image is constituted through geometrical extensity: a process of transmission that requires the externalisation of visual coordinates within planar geometric space. This bodily confusion between surface and depth will redefine the mode of sense-making developed further in this case study as one of "haptic perception".

Sound returns the filmic subject/image to the temporal dimension of the present. Even a recorded voice is always a voice experienced emphatically in the here-and-now. It was this very experience of "aliveness" that generated so much anxiety when the telephone was first introduced in the late 1800s. The transmission of the human voice was perceived as not only bringing into proximity someone who was physically distant, but also as a form of wireless connection to the afterlife. Hearing a disembodied voice required a perceptual shift that letter writing, a precursor to remote-controlled-speech, was not fully able to prepare the public for. The photo-album is accepted as an archival record of past events even though its contents can certainly provoke emotive responses in the present when we review them. Its pictures speak metaphorically but they are not "speaking pictures". In contrast, the recorded messages left on an answering machine are received as immanent—belonging to the present—the doubled moment of speaking and hearing.

An ontology of sonic time must therefore be figured differently than that of visual time. The contraction of "relative presents" within the encasements of time as visual (the "this was" of photographic indexicality) becomes a space of contraction-expansion within the flows and seepages of the acoustic that are always in a state of constant movement across temporalities (the "this becomes" of sonic virtuality). Sound exists as an expressive and elastic dimension of a continuous present even when we understand its recorded inscription as originating in the

past. A sister of a friend still uses the answering machine tape that belonged to her dead mother. Each time a call goes unanswered her mother comes on the line—she literally comes back to life. It is always a shock to hear the voice of the dead with such robust vitality. This act of techno-revivification, in which the dead are returned to the domain of the living, is amplified by the liquidity of sound as temporally mobile, able to flow across historical channels. Sound has the unique capacity to relink the past producing strange reality-effects in the present. This is particularly the case with the irradiated film score of Shevchenko's Chernobyl documentary as well as the sonic impurities emitted by Tape 342's 18-1/2 minutes of silence. Whereas the image (even one taken recently) is unable to install the sense of the here-and-now that the sound-event manages with such conviction. The index as theorised by Rolande Barthes has long held the photograph hostage to the past and thus makes it exceedingly difficult to reconfigure as an index of "presentness". Even photojournalism with its emphasis upon conveying events as they are taking place on the ground is still indebted to the Barthean index "this really happened"—past tense. Because something happened we [the viewer] are encouraged to respond, think and/or act in the present. Yet in some ways it is the very muteness of the subject [Phúc] in Ut's photograph that returns silence to the present as amplified sound to reverberate our cultural imaginary. Because of the now over-familiarity of the image as a visual icon, the intensity of the sensation felt by the public in 1972 as a collective body-blow is no longer readily available, repetition having engendered a certain optical immunity. If we are to tease any residual affect out of the image we will need to activate its other virtualities. This is the implicit ontological provocation raised by the Muirhead Picture Phone, which is after all a machine for scoring images and transmitting sounds, one that asks us to listen to the embedded 'musicality' of the picture.

SOUNDING OUT MATTER: As a dynamic form of expression, sound has the capacity to effectuate matter at different scalar levels from the macro of the built environment to the molecular of microscopic particles. Sound waves cut through the flesh of living organisms, generating a kind of nervous energy that translate signal vibrations into neural impulses. This internal voltage system supercharges the synaptic conjunctions between carnal pathways producing sensations of felt-sound. Sonic frequencies are also capable of moving through and reshaping inorganic matter, disintegrating the solidity of objects and even destabilising the integrity of urban infrastructures. For example, the rumbling vibrations produced by the acoustics of bridge-traffic eventually starts to breakdown polymers in concrete as sound waves create micro-interference patterns and stress fractures. Likewise, the sonic aftershocks produced by the mass bombing of London during the Blitz further weakened many of the city's already fragile buildings. Today "acoustic monitoring" of the environment from the tracking of high-frequency sound emissions to the detection of CO2 migration has become commonplace in the risk assessment and management of public health and safety.

Deleuze and Guattari have characterised this rhythmic vitality inherent to music (and sound) as a "continuous development of form" and a "continuous variation of matter". What the acoustic discloses is a "life inherent to matter, a vital state of matter as such, a material

vitalism that doubtless exists everywhere but is ordinarily hidden or covered, rendered unrecognizable. . ."[44] Sound exposes matter's capacity to be affected by external forces as seemingly inert materials yield to vital processes. The composition of machinic matter at the level of its micro-assembly is no less susceptible to being rebonded or remolecularised, under certain threshold conditions (for example the bonding of iron with oxygen to create rust) than that of organic entities. This "machine momentum" which it is sound's task to unmask, emphasizes matter's ability to enter into new spatial and temporal alliances.

Sounds Confusing

ACOUSTIC DEBRIS: The Muirhead Picture Transmitter is an interesting machine to consider in light of these discussions because its operational procedures complicate the visual as the privileged ground of representation, although the artefacts it produced eventually returned the textured sonic event to the flatland of the photograph. Our argument throughout this text contends that the image, which entered into the rotating scanning drum of the Muirhead K220 was not the same image that exited via telephonic AP transmission, but an over-encoded image that carried additional signifying traces—machinic residue—within its photonic substrate, rendering it a supplement to the originary event to which it is historically indexed. The unwitting acquiescence of the image to this form of technical subterfuge sullies its iconic image-track and literally opens it up to material entanglement with the many image-events that also transited through the organs of Muirhead Picture Phone at one time or another. What other events might then haunt this particular machine? Given that the movement of each photographic print through the transmitter resulted in the deposition of minute paper and chemical traces within its mechanics, surely these abandoned micro-particles must have partially rebonded and remolecularised themselves with each new image to come? How might this process of sedimentation mutate or modify each subsequent image and sound event produced by the machine? What new meanings might be formed or activated by this alchemical exchange? Through a strategy of conceptual détournement the Muirhead is, in effect, transformed into a virtual transmitting device in which all of the images that have already moved through its scanning drum, as well as those that are still yet to arrive, aggregate to vibrate our perceptive centres. The rhythms of the machine 'know' that there are other event transmissions out there waiting to be recomposed into localised image artefacts.

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BECOMING VOCAL: The image of Phúc was converted into sound but this was not a process, which restored her original speech acts, her cries of terror, but a machinic deterritorialisation that further accentuated the breach between the optics of the camera and the acoustics of the telephone. Rather then repatriating the sounds that are imaged in the silent visual program of the photograph, the Muirhead installed a kind of machinic confusion that activated other

[44] Gilles Deleuze and Félix Guattari, Nomadology: The War Machine, trans. Brian Massumi (New York: Semiotext(e), 1986). Pp. 102-03.

virtual flows. For example, it gave greater voice to the anti-war movement in the US. It also allows Phúc to renarrate her own history and slowly step out of the ideological picture-frame in which she has been contained these past 35 years.[45] Each time we hear her voice speaking she comes to us in the present and in so doing reanimates the image by telling another version of the story of the girl in the picture. Sound is reintroduced back into the image as the very means by which the image came into being rather than the explicit source of its meaning.

Apparatuses such as the Muirhead Picture Transmitter are not self-contained hermetic entities but are composed of "multiple parts, drives, and compositional terms" each of which allows them to detach from the "medial forms" to which they may have been 'naturally' predisposed or deliberately engineered and expand their connections.[46] This form of disentanglement becomes crucial to our understanding of the Muirhead, in that the redistribution of the machine's perceptual organs stresses difference, rather resemblance as the generative force propelling its "medial drives". As Lutz Koepnick notes in "Kafka Calling on the Camera Phone" the lack of synchronicity between voice and image "helps us recognise that the spectral discontinuity between sights and sounds is a source of creativity and liberation" rather than the cause of a crisis requiring the mediation of a suturing agent.[47] The rhetorical program of digital convergence implies just such an act of arbitration, given that connectivity is achieved through the functions of binary code, which suggests that everything can be reduced to the mathematics of zeros and ones. While it might seem that contemporary mobile phone technology has effectively closed the circuit between the camera, telephone, and typewriter—between the image, sound, and text—this closure is one of digital convergence rather than a redistribution of sensing organs. When the mobile phone is used to take a picture, it is thought of as a camera, likewise when is it used to create a text message it morphs into a keyboard. Each particularised use of the mobile phone instantiates the older technological forms to which it refers. We understand these processes as distinct and separate functions of the phone that have merely converged as a result of the intensive micro-processing capacities of the machine. In much the same way that we have come to understand the computer as a kind of "universal machine" in which all other machines are increasingly nested, the contemporary mobile phone does not find it genealogical origins per se with machines like the Muirhead.

Connections and entanglements are to be found, not in a reduction to sameness, but in processes of difference that cut across diverse constellations of ontological reference bringing heterogeneous elements into contact with each other. Discontinuity was instrumental to the operations of the Muirhead Picture Phone as the translation from vision to sound did not re-

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[45] "Although the activity within the frame directs the action, the fact that this is a photograph—a "static" image—means that time has stopped. The picture holds its experience of terror and uncompleted action for all time, while having the activity within the frame eternally repeat itself. This mythic sense of eternal recurrence as well as its "vertigo of time defeated" corresponds perfectly to the phenomenological structure of trauma: one simultaneously feels stopped in time while constantly repeating actions within that isolated moment. The normal flow of time has been fragmented into shards of isolated events, while the traumatized subject remains trapped in the continually recurring scene, unable to break out of the ever-recurring pain." Hariman and Lucaites, No Caption Needed: Iconic Photographs, Public Culture, and Liberal Democracy. P. 182.

[46] Matthew Fuller, Media Ecologies: Materialist Energies in Art & Technology (The MIT Press, 2005). Pp. 81-82.

[47] Lutz Koepnick, "Kafka Calling on the Camera Phone," Journal of Visual Culture 2 (3).SAGE Publications (2003). P. 356.

sync an audio track with an image track, nor did it reconnect the document with an originary event; a form of simultaneity which has come to characterise much digital mobile communication suggesting that indexicality itself has been superseded. Unlike the camera phone today, which is advertised as opening up "mobile windows onto the world which will finally situate speakers and listeners as equals" the Muirhead's operations were not based upon an ideal of reciprocity.[48] The document transmitted could never stand-in as an equal to the event it recorded, nor could the relationships mediated by the machine assume properties of symmetry. The simultaneity of the webcam, for example, attempts to collapse the distance between video capture and the transmitted event so that they become virtually indistinguishable from each other as disembodied perception sucks up embodied matter. The velocity of the programming machine connects the event to the documentary apparatus in a continuous informatic flow that seems to negate the process of analogue to digital translation that underwrites all such transactions.

Instead the Muirhead with its temporally elongated transmissions (12-14 minutes) reminds us that the event only becomes through the relay/delay of a series of discrete machinic fragments that we must recompose retrospectively to create a whole. The expressive chatter of the machine performs a technical slight-of-hand in creating an acoustic visual language that both supplements and is incommensurable with the expressive matter of the image's embodied origins. The Muirhead K220 thwarts the projected fantasies of digital convergence as simultaneous, unmediated communication, and exposes the desire for perceptual wholeness that fuels such conjunctive longings as a flawed quest. In its stead it offers an enunciatory machine with "polyvalent orifices" and "indeterminate organs".[49]

Translation

ONTO-CONVERSIONS: The shift from one "sense modality to another" is discussed by Laura U. Marks in her book *Touch: Sensuous Theory and Multisensory Media* (2002) with respect to Walter Benjamin's musings on the task of the translator. For Marks, the problematic that translation poses is not one between written texts, but rather how tactile experiences can be re-encoded through language while still maintaining their "haptic sense". This complex task of translation from "sensuous audiovisual media to the relatively more symbolic medium of words" recalls Mark Hansen's critic of technesis briefly cited in the *Glossary entry Machinic Ontologies.* Both Marks and Hansen are concerned with textual operations that convert

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[48] Koepnick, "Kafka Calling on the Camera Phone." P. 354.

[49] "But what does it mean to speak of a polyvalent orifice or an indeterminate organ? Are not a mouth and an anus very distinct, and is not the passage of time needed to get from one to the other? Even in the meat, is not a very distinct mouth, recognizable through its teeth, which cannot be confused with other organs? This is what must be understood: the wave flows through the body; at a certain level, an organ will be determined depending on the force it encounters; and this organ will change of the force itself changes, or if it moves to another level. In short the body without organs is not defined by the absence of organs, nor is it defined solely by the existence of an indeterminate organ; its is finally defined by the *temporary and provisional presence* of indeterminate organs." Deleuze, Francis Bacon and the Logic of Sensation. Pp. 47-48.

embodied experience into the discursive domain of language, a rhetorical conversion that risks a potential loss of the haptic and sensual dimensions of materiality (which they—unlike myself—locate exclusively within the category of the human).[50] The inscription of Phúc's incorporated flesh into the two-dimensional materiality of the photograph and its subsequent electronic conversion into sound waves that could be transmitted by radio relay is certainly evidence of a series of complex machinic translations. Yet the prevailing conception of technical objects as merely executing a series of preprogrammed instructions has diminished our understandings of the dynamism of the machine, particularly with the advent of digital coding. With the exception of generative computation and the hybridised domains of biomedia and nanotech, vernacular understandings of machine functioning are still surprisingly resistant to the notion that the various systems through which image and sound conversions flow are themselves subject to ongoing micro-modulation as feedback enters into informational loops or as entropy begins to transmute metals into rust, or even as the raging heat of hard drives spins out of control destroying data and hardware. Contrary to the conviction that machinic matter is immune to processes associated with sensate life, the exigencies of the Muirhead's technical operations (i.e. its intensive scanning and transmissional regimes) inevitably induce changes in the overall state of the system that become crucial to the task of translation.

FOREIGN TONGUES: Benjamin makes a fundamental contribution in insisting that translation inaugurates a productive difference between texts rather than merely installing a narrative of loss that it then becomes the duty of the theorist to recuperate or repair. Translations highlight the very impossibility of producing an adaptation that can conjure a mimetic likeness to the original; something is always altered in the movement between texts, between modes of representation, between acts of transmission. An understanding of modification as intrinsic to the long-term survival of language is, in a Darwinian sense, where Benjamin locates the material agency and potentiality that is immanent to all language.

"The basic error of the translator is that he preserves the state into which his own language happens to be instead of allowing his language to be powerfully affected by the foreign tongue. Particularly when translating from a language very remote from his own he must go back to the primal elements of language itself and must penetrate to the point where work, image, and tone converge. He must expand and deepen his language by means of the foreign language."[51]

For Benjamin the act of translation is a transformative gesture that gives rise to a "third text" that is akin to the birthing of a new language. Translations modify both the language of the translator as well as the language of the original, thus rewriting each language anew every time a text is adapted from one language into another. Any translation, he argues, that merely

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[50] While Hansen has "pressed for a radical break with representationalism, and indeed with the linguistic model altogether", Marks finds her conceptual footing within the kind of terrain previously staked out by Hayles in her book *How We Became Posthuman* in which she argues that discourse can be retooled in ways that foreground embodied experience if we consider how "language emerges from bodily and physical realities murmuring to the mind-brain." Hayles proposes a "model of cognition embedded in the world—a model in particular that dissolves boundaries between technical objects and the preconscious domains of cognition, and affirms the importance of emotion, proprioception, kinaesthesia, and other sensations in cognition." Cited by Lenoir, "Makeover: Writing the Body into the Posthuman Technoscape Part Two: Corporeal Axiomatics." Pp. 374-6.

[51] Walter Benjamin, "The Task of the Translator," Illuminations (London: Pimlico, 1999). P. 81.

strives to "perform a transmitting function cannot transmit anything but information—hence, something inessential."[52] This position echoes that of Shannon in arguing that information transmission is a question of numeric signal relay not that of expressive [phatic] content delivery.

"For Shannon, the issue was not about communicating significance or meaning, but simply about optimizing the signal-to-noise ratio in message transmission. Shannon measured information as inversely proportional to the probability of a signal reaching its receiver, and its quality in this formulation is determined by message length, complexity, and signal integrity. The meaning of the symbols encoding a message is completely irrelevant, though a binary digit may represent the toss of a coin (heads or tails) or the fate of the universe (expand or collapse)."[53]

While the task of the Muirhead K220 Picture Transmitter was indeed one of information transmission, the process of translating sound into an audio signal produced an artefactual "third media". In order for the photographic image of Phúc to extend its medial reach it had to undergo a series of machinic conversions. As pure electronic data the image could not exert its affective forces without its narrative reinscription within the field of representation. The transmission of audio signals alone would not suffice to resuscitate the expressive content of the original image-data. In order for the image to achieve any level of affective resonance, the transmission first had to be decoded and reordered, that is, it had to be translated. This process returns sound once more to the two-dimensional picture-plane of the image, not in order to restore its overt acoustic content—the silent cries of the fleeing villagers—but as the very constitutive means by which the image is reanimated in the present. At each point in the translation from the living body, through the framing device of the camera lens, to the activation of the film's chemical emulsion, to the developing and printing of the photograph in the darkroom, to its scanning, transmission, and reassembly by the Muirhead, minute variations and extraneous information entered into the process of selection and conversion, modifying each transmission and translation in its turn.

AFTERLIFE: Translations do not produce symmetrical relations but highlight the differences between things, their irreconcilable qualities rather than their common themes, structures of resemblance or properties of verisimilitude. Translations do not find their conceptual resources in the life of the original but as Benjamin suggests in its "afterlife". The translation always comes after the original; it is never synchronous with the genesis of that to which it refers. For Benjamin the translation marks the "continued life" and renewal of the text. Furthermore he maintains that when its comes to "images of reality" (in my case that of the girl in the picture) "no translation is possible if in its ultimate essence it strove for likeness to the original. For in its afterlife—which could not be called that if it were not a transformation and a renewal of something living—the original undergoes a change."[54] The image as pure presence is unreadable, inert, it requires a transmissional process that can connect it to an enunciatory

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[52] Benjamin, "The Task of the Translator." P. 70.
[53] Lenoir, "Makeover: Writing the Body into the Posthuman Technoscape Part Two: Corporeal Axiomatics." P. 375.
[54] Benjamin, "The Task of the Translator." P. 73.

apparatus in order activate different perceptual receptors. "Media transmission is the becoming *of the event.*"[55]

The Muirhead, as a mechanism for translation, was able to reanimate the living-corpse towards which the image as trace only pointed. In reading about Phúc's memories of the Napalm attack, there is no question that she is as much a zombified by-product of the image—the walking dead seared into monochromatic film—as its proper subject—the embodied victim of an intensively hued and chromatic violence. Although the image extends its vampiric reach, feeding off the particular trauma of her past, it is in part through Phúc's public appearances and anti-war activism that she is finally able to transform our interpretation and understanding of the historical event that engendered it. Translation as a form of telematic speech is returned to the one who is finally authorised to speak on behalf of this sonic-image-event.

What is of interest in rethinking the translation between sensing modalities for my purposes is not an anthropomorphic trajectory that attributes human sensory organs to what had previously been regarded as cold deterministic technical matter. To pose the question of machine experience in terms of sentience need not reinstall a human cartography, but rather suggests that the machine and its informatic transmissions are themselves capable of producing and being affected by dynamic processes: a discourse of machinic vitality that no longer belongs to the sovereign jurisdiction of organic beings. "The concept of life is given its due only if everything that has a history of its own, and is not merely the setting for history, is credited with life."[56] This is the continual refrain of this chapter and the thesis in general.

Haptic Processing

Marks suggests that it is: "timely to explore how a haptic approach might rematerialise our objects of perception, especially now that optical visuality is being refitted as a virtual epistemology for the digital age."[57] Her dual formulations of "haptic visuality" and "haptic criticism" are directed towards collapsing the distance between perception and experience, that she argues was a consequence of a "European post-Enlightenment rationality" that sought to order and classify the world, not through direct phenomenological engagement with its objects, but by arranging them at a comprehensive distance from the viewing subject. This paradigm shift from experience to perception was fuelled by the disciplinary regimes of the 19th century, which charted a totalising picture of the world by separating knowledge domains into discrete empirical categories. The birth of the museum, for example, consigned its objects to specific spaces of visual display, which provided occasions for looking rather than opportunities for tactile interaction, as had previously been the case with cabinets of curiosity.

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[55] Brian Massumi, Parables for the Virtual: Movement, Affect, Sensation (Durham: Duke University Press, 2002). P. 81.
[56] Benjamin, "The Task of the Translator." P. 72.
[57] Laura U. Marks, Touch: Sensuous Theory and Multisensory Media (London: University of Minnesota Press, 2002). P. xiii.

Vision, Marks states "ceased to be understood as a form of contact and instead became disembodied and adequated [sic] with knowledge."[58]

FEELING PICTURES: Marks received understanding of the term haptic is borrowed from Deleuze and Guattari who themselves have borrowed it from early 20th century German art historians Alois Riegl and Wilhelm Worringer. "Riegl claims that touch is superior to vision in providing information regarding the material impenetrability of objects, yet vision surpasses touch by informing us of height and width, since it is able to synthesise multiple perceptions more quickly than touch. A comprehensive knowledge and understanding of stable objects as three-dimensional requires the subjective synthesis of multiple tactile and visual encounters with the object."[59] Deleuze and Guattari employ the term haptic when describing the modes of intimate sensing that are necessary for negotiating smooth spaces such as sand or snow; the kinds of spaces that nomadic peoples in particular encounter. These are spaces without sharp edges or overt differentiation that must be experienced haptically, that is, by "constant reference to the immediate environment."[60]

"In this Smooth Space all orientation, landmarks, and the linkages between things are in continuous variation and constant transmutation. Relations build haptically or "step-by-step" according to no pre-arranged or pre-governed schema. There is no stable unified set of referents since orientations are never constant, but constantly change. The interlinkages themselves are constituted according to an emergent realm of dynamic tactile relationships that have more to do with how a Nomad conceives of their territory."[61]

The haptic demands modes of tactile exploration across the image-plane of the photograph that isn't guided by references to a frame, a computer screen or the edge of a visual field. In haptic exploration we must also probe the interior depths of the image rather then merely its surface effects. Haptic movement risks the fall into the abyss, that is to say, into the space outside the image confusing geographic coordinates between the world inside and proper to the image and the chaotic domain outside its structural parameters. This confusion occurs when an image is pressed up so closely to our eyes or the optical receptors of a scanner, that we can never know with certainty when we will reach the edge of the print or the threshold of topographic image-data. It is not insignificant that the Muirhead's scanning drum always took in more visual information than that specifically delimited by the print. In automatically extending the boundary of the image surface (the area to be scanned) the machine ensured that the image was never inadvertently cut or cropped. This informatic plenitude, not only increased the statistical possibility of deviations entering into the reassembly of its image-data, but as an automated function of the machine, over-scanning returned "uncertainty" to the translating procedure. In that the machine was never entirely certain as to where the actual image began and ended.

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[58] Marks, Touch: Sensuous Theory and Multisensory Media P. xiii. See also Tony Bennett, The Birth of the Museum: History, Theory, Politics (London: Routledge, 1995).
[59] D. Ambrose, The Haptic, 2006, February 15 2006.
[60] Marks, Touch: Sensuous Theory and Multisensory Media P. xii.
[61] Cited with minor modifications. Ambrose, The Haptic.

"Haptic criticism is mimetic: it presses up to the object and takes its shape. Mimesis is a form of representation based on getting close enough to the other thing to become it. Again, the point is not to utterly replace symbolisation, a form of representation that requires distance, with mimesis. Rather it is to maintain a robust flow between sensuous closeness and symbolic distance."[62]

TACTICAL TACTILITY: Haptic criticism as deployed by Marks offers innovative ways for her to examine intercultural film and video outside the dominant theoretical frameworks that have objectivised her objects of study and placed them at a comfortable analytic distance to the researcher. Translating the languages of intercultural cinema or investigating the expressive capacities of machine-based operations through the tactile image-processing of the haptic requires that we get our hands dirty so-to-speak, that we remain open to the possibility that we ourselves will be tainted [affected] by our encounter with our research materials. To find one's way through nomadic space requires strategies of immediacy and intimacy in relationship to the environment, so that one proceeds, not by going from this point to that, from this building to that one over there, but by groping and feeling one's way through space—through sand storms and snow drifts—transforming travel from vectoral to viral. A form of navigation that is not impervious to danger given that one can easily lose one's way in such undifferentiated terrain. But such loss of intentional directionality also opens up other routes and exposes alternate and unexpected horizons. This act of technical subterfuge in which seeing is transformed into touch induces an ontological substitution that is exemplified by the operations of Muirhead K220 Picture Transmitter. If there is a "symbolic distance" between the machine's representational program [the cultural production of an image] and it "sensuous closeness" [the probing of the image by its photocells] it is a crisis installed between the originary act of violence that provoked the picture and the impossibility of representing violence in its full chromatic range.

The paradox of translation as producing infinitely mutable texts identified by Benjamin is remobilised by Marks as a necessary condition of critical writing but also one that makes ethical demands upon the cultural theorist who must still maintain a relationship of integrity with the original work. Although entanglement as a methodological approach, which I have discussed briefly in the *Introduction* may suggest that all objects and events are equally available for their "promiscuous entangling" with all others, this doesn't mean that relations are generated with impunity. To entangle means to act in and on the world, an activity of meaning production that requires an ethical response to the world. The scanning drum of the picture phone in creating an abstract electronic representation radically alters the visual contiguity of the image, which in its discombobulated state seems to momentarily suspend our perception of the actual event to which it refers. Is seeing when reduced to mathematics freed from its contextual obligations? Can pure data have an ethical dimension, in so far that it is subject to variation and coding modifications, which in turn govern its potential to mutate? Should the stability and integrity of information transfer be held accountable to an originary event or does the selective framing device of the camera, for example, already compromise it?

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[62] Marks, Touch: Sensuous Theory and Multisensory Media P. xiii.

Can the electronic inscription of the visual carry any traces of the violence out of which it emerged or is it evacuated of all meaning and all content until it is decoded? To what extent is the transmitting machine immanent to the particularities of the events that enter its circuitry via images and exit via sound?

In raising these questions we are returned once again to the problematic interface between humans and machines as an issue of critical agency. Many theorists have suggested that the new perceptual modalities facilitated by digital processes have abstracted vision; that images can no longer guarantee the "position of an observer in a "real," optically perceived world."[63] Nor by extension does sound necessarily still anchor itself within an organic receptor body. For example, ultra-high frequency audio emissions are employed in tracking devices that by-pass the apparatus of human hearing altogether and are audible only to certain specialised machines. This substitution of the human traditions of seeing (automated CCTV analysis) and hearing by technical machines implies that the circuits of information transfer need no longer include the human as its privileged point of reference. While this disavowal is problematic for both Hansen and Marks, for whom the haptic restores the affective agency of the body, for my purposes the haptic is redirected towards an account of embodied materiality immanent to the machinic assemblage that doesn't requires its enframing by the human to trigger its virtualities. The machine has its own unique sensing organs that position it as an active and reciprocal agent in the world rather than a passive conduit through which information transits. My project explores the haptic, but also rejects the belief that perceptual systems involving information require the mediation of an interpretative agent, to channel Hansen, located within the "wetware circuitry" of the body. This project takes up the provocations raised by the haptic but also shifts it in arguing for an additional realignment that acknowledges the machine as neither external to such felt processes, nor the human as necessarily privileged within such fields of operations. As Deleuze has consistently reminded us, the human is only one problem amongst many to which we may be attuned. In this regard, our understanding of the body proper is extended to include the relational assemblage of the machinic body entangling the Muirhead with all other manner of bodies and events that have been implicated in it technical registers.

"A key issue in philosophical analyses of technology concerns the most appropriate way of conceptualizing innovation. One may ask, for instance, whether human beings can truly create something novel, or if humanity is simply realizing previously defined technological possibilities."[64]

ALLUVIAL DEPOSITS: Media theorist Manuel DeLanda makes the significant observation that the emergence of many technical systems has not necessarily followed anthropomorphic lines of development, nor were such developments necessarily guided solely by human requirements. Technological objects such as flint shards or oscillators in biological clocks

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[63] Lenoir, "Makeover: Writing the Body into the Posthuman Technoscape Part Two: Corporeal Axiomatics." P. 378.
[64] Manuel DeLanda, "The Machinic Phylum," V2 Archive (1997), June 10 2007 <http://framework.v2.nl/archive/archive/node/text/.xslt/nodenr-70071>. P. 1.

existed long before they were recognised as potentially useful for human needs.[65] "Human artisans" says DeLanda, rather than playing the instrumental role, should "be pictured as tapping into the resources of self-organizing processes in order to create particular lineages of technology."[66] The artisan, inventor or scientist thus "selects and appropriates" from these differentiated resources and reorganises them into a concrete physical assemblage—a machine. This is not to posit the machine as merely a deterministic agent of self-organization, but rather to understand that the technical pathways directing the development of any technology are also determined by factors beyond the jurisdiction and control of the researcher. From the machine's point of view, these factors may be much more significant than the ministrations of a scientist in an engineering or computer lab and therefore we must pay heed to the ways in which machines might understand their own modes of historical emergence. To propose such a fiction is to suggest that the machine has its own particularised phylogenetic alignments; that it may choose to find its genealogical origins within its metallurgical past rather than within the kinds of human modalities that have consistently delimited the media object.

"In short, what metal and metallurgy bring to light is a life proper to matter, a vital state of matter as such, a material vitalism that doubtless exists everywhere but is ordinarily hidden or covered, rendered unrecognizable, dissociated by the hylomorphic model. Metallurgy is the consciousness or thought of the matter-flow, and metal the correlate of this consciousness. As expressed in panmetallism, metal is coextensive to the whole of matter, and the whole of matter to metallurgy. Even the waters, the grasses and varieties of wood, the animals are populated by salts or mineral elements. Not everything is metal, but metal is everywhere. Metal is the conductor of all matter. The machinic phylum is metallurgical, or at least has a metallic head, as its itinerant probe-head or guidance device."[67]

Conceptualising the machine as relationally produced through a series of aggregating forces: organic and nonorganic, physical and energetic, human and nonhuman, raises the possibility that any photograph moving through the Muirhead Picture Transmitter might leave behind itinerant and errant tracings forged out of chemical sunlight and alluvial deposits—analogue photography's ontogenetic substance. These medial tailings allow us to follow expressive matter-flows through the dark image-matter of the machine to connect with the luminescent matter-flows of embodied flesh [Phúc] as both continue to flow through the turbulent channels of history.

LIGHT FLOWS/DARK CURRENTS: Bernard Stiegler has suggested that the "analogue-digital problematic" to which a machine like the Muirhead points is a question of luminance, one bracketed by a fear that portends the coming of nocturnal light, which he assigns to the coming of the digital image. Unlike traditional analogue photography, which is consecrated by the forces of daylight falling upon the object to be photographed, digital photography is born out of darkness—the silica metallurgy of the microchip buried within the rocky recesses of the earth. With the analogue, luminal photons stream away the thing photographed to activate

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[65] One such example is that of the conoidal bullet, a 19th century invention that "resisted human control for over a hundred years. It simply took that long for commanders to integrate rifled firepower into an explicit tactile doctrine." Manuel DeLanda, War in the Age of Intelligent Machines (New York: Zone Books, 2003). P. 7.
[66] DeLanda, War in the Age of Intelligent Machines. P. 7.
[67] Deleuze and Guattari, A Thousand Plateaus: Capitalism and Schizophrenia. P. 411.

silver halide crystals embedded within the emulsion of photographic film and paper. Whereas digital photography is composed by an electronic agency, the binary sequencing of code that sparks numeric values from within the machine, impervious to the intercessions of natural sunlight. "It is an electric light released by the subterranean matter of the earth's belly. It is an electronic, that is to say, a de-composed light."[68]

▣→ V102 / V104 💬→ V103

PHOTO-SENSORS: To experience this particular machine, the Muirhead K220, is to enter into its past-life, to that moment when optics gave way to a haptic mode of perception as the machine experienced the image of Phúc moving through its internal system. It feels its way literally and metaphorically in the dark using the syncopated firing of its photocells to illuminate its passage. If we recall, it is the Muirhead itself that "presses up to the object"—the photograph—but it is the object that takes the shape of the machine, that curls around its rotary drum. The photograph clings to the machine, entering into a tactile relationship with the sensing mechanisms of its photoelectric cells, which must caress the image in order to make sense of it. The machine feels the image through direct visual contact with the print. It proceeds haptically, grain-by-grain, assessing individual luminal variations to create an image-map. It creeps across the surface of the photograph without any knowledge as to the overall topology of the print or even the mutual relations between surface grains. Deleuze and Guattari define this pure haptic space of close-vision as a "a virtual space whose fragmented components can be assembled in multiple combinations."[69] WWII cryptographers spoke of similarly haptic modes of image-perception in describing their meticulous accounts at decoding aerial-surveillance photography, a process now assumed by adaptive image-analysis software. These cryptoanalysts literally had to plunge into the micro-depths of the image, probing each variable grain that was suspended in the print's emulsion in order to bring particularities and patterns to the surface that could then be compared with earlier reconnaissance imagery of the same site. "After 'resurfacing' from extracting data from an image, the photoanalyst must then organize that data into patterns from which further inferences and extrapolations can be made."[70]

Although the print that entered the circuits of the Muirhead Picture Phone was in photographic terminology, a continuous-tone image that indexed a real event, its transit through the mediating apparatuses of the camera, darkroom, and eventually Muirhead was conditioned by a series of haptic interventions in which it was repeatedly undone and remade at the particle level of the grain. The machine's ability to create a specular mirage in the image of the original out of a series of abstractions was reliant upon the co-operation of speech acts between physics, chemistry, and electronics; a series of technical translations, which were fundamentally dynamic, susceptible to incremental change, and possible mutation. The object/image was thus not entirely predetermined by what it was on June 8 1972, by its

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[68] Stiegler, "Images and after-Images." P. 232.
[69] D. Ambrose, The Haptic, 2006, University of Warwick, Available: http://blogs.warwick.ac.uk/crpl_art/entry/the_haptic, August 15 2006.
[70] DeLanda, War in the Age of Intelligent Machines. P. 192.

optical form and granular history, but remained open, that is to say, vulnerable to the temporality and aggregating operations of multiple machinic drives.

ALCHEMICAL EXCHANGES: The photographic image originally printed by Ut and Jackson was itself the product of a series of alchemical exchanges between immaterial and material flows beginning with the flesh of Phúc herself, which was radically transformed by the incendiary gel of napalm. Not only did the chemicals burn her exterior, they continue to exert their influence deep within the subcutaneous layers of her skin. "Finally there is a very peculiar feeling that arises from within the body, precisely because the body is felt under the body, the transitory organs are felt under the organisation of fixed organs."[71] Without open pores to modulate the internal temperature of her body in its burn areas, a seemingly alien force moves within that pushes at the body's frontiers causing ongoing pain and swelling. It is as if the chemicals that damaged the skin seeped into the body and changed its very molecular composition. Not unlike the earlier victims of Hiroshima and Nagasaki whose flesh was also turned into photogenic plates as atomic violence imprinted itself directly onto the body searing even the fabric patterns of clothing worn by victims into variegated burn marks. In both cases, chemical exposures to an exploding bomb converted living bodies into archival corpses on whose epidermal surfaces the horrors of war were radiologically recorded. Through radical chemistry the nonorganic is bonded to the organic creating in the words of Arthur and Marilouise Kroker an extreme "flesh machine", troubling any residual notions of the naturalised body with its organs fully intact.

HAND-EYE DISCORD: Although Deleuze when writing about Bacon's paintings contends that "photographs cannot produce an intensity of sensation, or rather cannot produce differences within sensation" in that they, unlike painting, do not activate the body and provide different ways of seeing but are merely a recording and a resemblance of what we see.[72] Painting, says Deleuze, requires the co-operation of the artist's hand, which is always in a relationship of imbalance between the eye. What the eye sees can never be registered absolutely by the hand; something always changes in the process of translation. Something different always emerges from within the depths of the painting itself, from within the viscosity of paint. It has certainly been argued, contra Deleuze, that any interpretation or reading of a photograph is always conditioned by an external matrix of factors (unique to each viewer) that brings it into contingent relationality within the visual playing field of the present. The recording and resemblance to what we see, is in fact a recording of a particular way of seeing. Moreover, the conceptual investment in the gestural movement of the "artist's hand" has been thoroughly critiqued within postmodernism as a discourse of mastery in which the uniquely human subject assumed the right of advantage over technical modes of image reproduction. But it is perhaps the general acceptance of the image's veracity as an indexical trace produced by a technological apparatus with no inherent subjectivity that structures the contract between perceiver and perceived as one of consensus and not dissent.

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[71] Deleuze, Francis Bacon and the Logic of Sensation. P. 49.
[72] Johnston, "Machinic Vision." P. 34.

"It is as if the hand assumed an independence and began to be guided by other forces, making marks that no longer depend on either our will or our sight. These almost blind manual marks attest to the intrusion of another world into the visual world of figuration. To a certain extent they remove painting from the optical organisation that was already reigning over it and rendering it figurative in advance. The painter's hand intervenes in order to shake its own dependence and break up the sovereign optical organisation: one can no longer see anything, as if in a catastrophe, a chaos."[73]

Deleuze's formulation of the hand as a kind of sovereign agent working independently of the eye—a demonic part-object—locates his analysis of painting within the proprioceptive domain rather than within that of representation and culture. For Deleuze, art's functionality is concerned with producing "sensory aggregates" rather than pictorial fields within perspectival space.[74] Proprioception refers to a form of sensing in which stimuli are produced and perceived internally within an organism and not generated externally through a network of social and cultural relations. The hand is not so much the privileged organ of genius working in concert with the eye, but a ventriloquised organ through which the language of painting speaks as if possessed by an autonomous, otherworldly force. Hand and eye are understood as disjunctive organs that confuse the integrity of the body-machine thus also refuting the symmetry that hand-eye coordination as a signifier of aesthetic virtuosity has long favoured. The peculiarity invoked by Deleuze in his analysis of Bacon's visceral works is one in which the viewer senses that another body can actually be felt under the surface of the painterly body. "Feeling" is thus reconstrued as producing an entirely new organ of knowledge. The painter's marks "are traits of sensation" but the world they conjure forth is one of "confused sensations" and proprioceptive operations, entangling it conceptually and procedurally, if you will, with the image-processing regime of the Muirhead as well as with the felt physiological trauma experienced by Phúc's burnt body. The pain she confronts daily is that of an other—an intruder—in the sense forwarded by Jean-Luc Nancy, that lurks within her own corpus and exerts its subcutaneous force independent of her own will.

As I have suggested, this idea of an intrusive agent that confuses boundary distinctions, that blurs operations traditionally accorded to the hand and eye [vision and tactility] finds expressive conjunction within the technical procedures of the Muirhead K220, as its mechanical organs—its scanning drum and photoelectric cells—literally sense the emergence of another body each time an image enters into the machine. But it is a process of translation and transmission that requires the deliberate confusion of sensing modalities. Only through the distributed perceptual functions of the machine can data re-emerge out of the depths of acoustic transmission to reconstitute itself as a representational force. "It is like the emergence of another world." So how you might ask is this different than the intercession of any other machine, which is reliant upon processes of data-conversion: encoding, decoding, and recoding? By way of a partial response, it is important to note that the Muirhead Picture Phone anticipates, already in the late sixties and seventies, the future of digital convergence while maintaining a productive gap between its medial drives that may allow us to rethink the

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[73] Deleuze, Francis Bacon and the Logic of Sensation. Pp. 100-101.
[74] See Gilles Deleuze, Negotiations (New York: Columbia University Press, 1990). P. 123.

digital machine today in similarly heterogeneous and ultimately creative ways. Rather than a reduction to sameness, the Muirhead is a machine that mobilises difference in order to produce its material flows. Furthermore the acoustic signal that travelled from Saigon to Tokyo and then onto New York and London was so resonant with the affect of catastrophe and chaos that when it eventually coalesced into a photographic image it immediately negated the privileged position of the optical in that trauma always exceeds the bounds of possible representation. What we see in the image of Phúc seems to be a document of the impossible from which our eyes involuntarily turn away. Even then-President Richard Nixon understood the forcefield of emotions that such an image could publicly unleash when he secretly questioned whether the image had been "fixed".

📖→ V204

Following our preceding discussions, the notion that the image is always subject to modification as a result of its transit through the inscriptive apparatus of the machine suggests that Nixon's insensitive remarks as to the image's veracity are perhaps not as wholly objectionable as we might first feel. But this would be a misreading of the machine's haptic potential, in that, yes the image inevitably changed through its repeated transmissions enroute from Saigon to New York, but these micro-modulations are a consequence of the machine's volatile connections to other machines and not the outcome of deliberate narrative interference. Which is to say that the mode of haptic behaviour advances without predetermination and as such could not alter the image with a new image already implanted as its specular goal. The machine cannot know in advance what history it will eventually testify to. To move beyond the overt rhetorical dimensions of the image and enter into its subterranean fields of expression requires haptic sensing rather than optical perception. To look closely at the photograph of Vietnamese children fleeing the Napalm attack, is to penetrate the granular space of the print so that "we become amoebalike" in our exhaustive explorations of each grain. Even the acoustic dimensions implicit in the image are already more fully present in the signal-processing capacities of the Muirhead Picture Phone, which in their state of encoded abstraction suggest the impossibility of a rhetorical program that can represent crisis adequately.

DEPTH CHARGES: The sound-image rushes towards us, it refuses to maintain an objective distance as its sonic and visual plenitude fills each of our external pathways deafening and blinding us. Affect, I argue, can only be returned to the image through the circuits of the sonic and in particular the haptic, which is able to reactualise the affective and virtual dimensions of an event that has now long perished. What happened must undergo certain ontological change; only this allows it [the image] to become a matter of concern for us again. The haptic forces a rethinking, in essence a re-encounter with the image that our previous discussion of poverty-fatigue vis à vis the discourse of "afro-pessimism" relegated to the domain of the ineffectual. Images cannot transmit their affect in perpetuity. In fact the proliferation of such transmissions increasingly diminishes their capacity to move us for long. This is the point that Enwezor makes. But it is precisely because something withers [stops being] that it can become

again, allowing the echoes and resonances of the artefact to entangle themselves with other prospective and retroactive events. Because haptic sensing is concerned not with entire and contained fields of representation, but with minute interference patterns that confuse the integrity between the perceiving subject and the image landscape they are traversing, the image eludes its indexical quality as a signifier of meta-content installing in its stead a 'partial-print' in which the index functions only as an inference or trace that something did indeed happen.[75] Consequently the image becomes somewhat multiple and even malleable, given that it is no longer the guarantor of authenticity par excellence, but merely a "sensory aggregate" composed of many part-objects [image fragments], each of which makes certain meanings or conjectures available. In a haptic approach to seeing/feeling, access points into the image are variable and emerge from within the photograph; they are bottom-up in contradistinction to the top-down model of ocularity associated more generally with looking at pictures as stand-ins for entire worlds.

"In haptic seeing, all our self rushes up to the surface to interact with another surface. When this happens there is a concomitant loss of depth—we become amoebalike, lacking a center, changing as the surface to which we cling changes. We cannot help but be changed in the process of interacting. We give up believing that meaning is formed after the fact, in our minds, and attribute power to create meaning to the interaction itself. In other words, we give up some of our power of self-determination in order to let the other transform us."[76]

Marks extends the Deleuzian notion of how nomadic peoples traverse space haptically by way of a felt-intimacy with the land to haptic seeing, which she argues involves a similar form of travel across image-fields; a shift that in turn displaces the conventions that have organised the space of vision since the arrival Renaissance perspective. In this Cartesian model of visuality, light wavelengths enter into the retina of the viewer activating its light-sensitive cells (rods and cones), sending nerve signals to the brain, which interprets them as coloured visual images. Light moves into the body where it is eventually organised into images, but the body does not necessarily reach out and "grasp" the world in order to perceive it. It has long been argued, particularly within film studies, that "the look" is an active force that can remake the viewer, that the glance has embodied agency. What we are concerned with here is the kind of looking that moves beyond the flatness of the picture-plane or screen and enters into deep dimensional spaces to create experiences of radical closeness and depth. The kind of closeness that occludes the 'larger picture', which is by definition, anchored in contextualising frameworks that instantiate a "culture of distance".[77] Knowledge formation in these all-encompassing systems is accounted for through acts of empirical observation that sustain the coherency and stability of the viewing subject. In contrast haptic seeing emphasises intimate, interpenetrating encounters between the "self and other" that have the capacity to effectuate much more radical transformations of the bodies [machines] of the perceiver.

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[75] See Ariella Azoulay, The Civil Contract of Photography (New York ; London: Zone, 2008).
[76] Laura U. Marks, Haptic Visuality: Touching with the Eyes, 2004, Available: http://www.framework.fi/2_2004/visitor/artikkelit/marks.html. Pp. 2-3.
[77] A term coined by Raymond Williams when he discusses the televisual transmission of the Malvinas/Falkland War as the intentional inscription of a media culture of distance that allowed "institutions of constitutional authoritarianism to dominate." Raymond Williams and Alan O'Connor, Raymond Williams on Television: Selected Writings (London: Routledge, 1989). Pp. 19-21.

CLOSE-UPS: The idea that "our self rushes up to the surface to interact with another surface" decentring and destabilising epistemological and by extension hegemonic conventions was exemplified by the operations of sixties and seventies media machines which transmitted detailed and uncensored images of the Vietnam ground war to an American televisual public. Seeing the distressed bodies of the wounded and the dead in unflinching detail within the delimited space of the television screen collapsed both geographic and psychic distance producing, in effect, a convergence of sensation as seeing became an intimate mode of felt-perception. The media coverage flowing out of Vietnam (by network as well as freelance journalists) and into the picture-tubes of America literally "brought the war home", bringing viewers much closer to the site of violence than had the earlier newsreels of WWII screened at local movie theatres or the subsequent media broadcasts of the first Gulf War with their computer simulations of night-time aerial bombing. The body in pain, in anguish, and in death, disappeared almost entirely from the nightly news.[78] In Vietnam, close-up images of destroyed civilian populations and emotionally-shattered troops had created new forms of image-identification, but without the repatriating operations of patriotism that had been used to rally support for the war effort during the 1940s. Seeing at a distance allows for a certain disinterestedness on the part of the viewer whom it positions as an objective and rational subject, whereas the close-up is cinematically structured to provoke an emotive and subjective response. It mobilises our interest even if that concern is one not of empathy but of disapproval. As with the haptic, in looking at a close-up there is no room for optical escape, given that the entirety of the picture-plane is brimming with excess image-data that is pushed to the ontological threshold of the screen. We either plunge into its depths or avert its radiant streams by turning away or turning off the machine. An important lesson about haptic visuality was learned in Vietnam that ultimately shaped US policy decisions with respect to how the war was to replayed for domestic viewing audiences in the future. If coverage of the conflict in Vietnam had brought the war into the living rooms of America, its images brought the war into its streets as protests escalated with each concurrent media transmission.

The haptic, understood as a form of felt-perception, is conceptually locked into the mechanism of the close-up which itself underpins the tactile nature of the Muirhead's scanning operations. The significance of any document or image placed on its rotary drum isn't the consequence of an entirely retrospective gesture as Benjamin might argue in his writing on translation, but is immanent to the interaction between multiple perceptual registers that bring the human and machine into co-articulating domains. Which is to say, that while the image or event must be recomposed retrospectively to create a contextual whole, sensation is not bound by the same representational schema—the desire for wholeness—but is experienced as fragmentary, colliding intensities that cut across planes of signification. In as much as the machine proceeds haptically in probing the photograph to create an abstraction—a sonic image map—the body too can process the image haptically as a form of "visual sense-making" whereby perceptual closeness provokes a reciprocal transformation between self and other. Haptic sensing is thus

[78] While the US Administration's strategy of "embedded journalists" was designed to control the flow of information and images during the current war in Iraq, online blogging by Iraqi civilians and US troops has provided unprecedented media access to alternate accounts of the ground war.

a distributive mode of production in which the emergent behaviour of the machine, the ability of its electronic organs to process and resynthesise informatic data, creates new perceptual experiences that are coextensive with it. Any changes in the behaviour of the machine such as faulty wiring or an electrical surge are experienced as differences that can affect the entire network of relations in which it is nested.

SHOOT ME: In looking at Phúc's outstretched arms and open mouth as she runs screaming towards Ut's camera we are brought into contact with yet another image, some fifteen years hence, one that scripts a complex narrative arc between historical memory and the modes of creative expression that allow certain, even fictive, images to surface again within our collective consciousness to be felt once more; to become, in essence, a matter of concern again. In Stanley Kubrick's 1987 film *Full Metal Jacket* the singular image that undoes the entire masculinized, heroicized, sexist, and racist subtext of American intervention in Vietnam is that of a lone North Vietnamese sniper. After the killing of four American troops by the sniper, the remaining marines fall into a state of chaotic disarray. Gone is the fanatical discipline of their boot camp training so relentlessly detailed by Kubrick. Motivated only by a sadistic urge for a revenge killing they eventually locate the sniper and unleash a barrage of bullets. As the sniper falls to the ground we see that she is actually a young woman. Her diminutive bearing and racialized otherness stands in sharp contrast to the muscled American marines that she has brought to this point of diegetic crisis. Although fatally wounded she is still alive. The camera now moves in on a close-up of her agonised face and eventually we hear the stuttered words "shoot me," repeated through her dying breaths.

→ FILM V205 SHOOT ME

This imperative to "shoot me" is uncannily repatriated from the earlier scene of Phúc's own photographed terror. The actions of Ut's camera replicated not only by those of Kubrick's cinematographer but also by the young woman who in pleading "shoot me" reminds us that both the gun and the camera are terminal machines for ensuring the death of the subject. And yet how can we understand the close-up processes of the Muirhead if not as a machine for the reanimation of nonorganic matter, a machine dedicated to the renewal and affirmation of life, a machine in which all of the images that have passed through it still aggregate vibrating our perceptive centres. Although these collective images anchor themselves deep within our bodily matter they do not remain there as solitary embedded resonances or traces but are cytologically entangled, as Henri Bergson states, to the universe as a whole, given that we are also spatially implicated as bodies; beings-in-the-world.[79]

[79] "Here is my body, writes Henri Bergson, with its "perceptive centers." These centers vibrate, and I have the representation of things. On the other hand, I have supposed that these vibrations can neither produce nor translate my perception. It is then, outside them. Where is it? I cannot hesitate to answer: positing my body, I posit a certain image, but with it also the aggregate of the other images, since there is no material image which does not owe its qualities, its determinations, in short, its existence, to the place which it occupies in the totality of the universe." Henri Bergson, Matter and Memory, trans. N.M. Paul & W.S. Palmer (New York: Zone Books, 2005). P. 228.

"An iconic photo that is said to capture the horror of war is not gruesome, but it does freeze the spectator in a tableau of moral failure. Betrayal short-circuits the power of institutional narratives to sublimate disturbing incidents, and the photograph perpetuates this sense of being caught in time, helpless before the event itself, unable to move on. This sense of powerlessness extends to control of memory itself, as the image circulates through the media, recurring again and again unbidden."[80]—Robert Hariman & John Louis Lucaites

→ A101 → FILM A102 STANDARD OPERATING PROCEDURE

SHUTTER BUGS: In a recent film release *Standard Operating Procedure* (2008) based upon the book by Philip Gourevitch, director Errol Morris asks the question "Is it possible for a photograph to change the world?"[81] A provocation that lays down the base-track for his documentary account of the Abu Ghraib prison atrocities in Iraq (2003/04). The film takes digital snapshot photography as the framing device for re-examining the actions of American soldiers based at the prison in setting up a series of horrific image-events that eventually streamed out of the laptops of US Amy personnel into public media networks. The film in exploring what Morris terms a "morally ambiguous" narrative focused upon the various roles played by photography as a complicitous agent, a dealer in dirty pictures, an incontrovertible witness, and ultimately a scapegoat to the criminal acts perpetrated at Abu Ghraib. Photography seemed to offer up conclusive evidence that only a small group of low-level soldiers with 'deviant' predilections and a surplus of free-time committed acts of extreme and humiliating abuse against detainees for the sole purposes of recording, sharing, and distributing these image-files with friends and others. Abu Ghraib it has been suggested by Gourevitch is the "smoking gun" that will unravel the criminality of Iraq as Tape 342 was in the Watergate proceedings. Moreover, the photographs as explicit testimonials have deflected attention away from the chain of command that allowed such flagrant abuses to take place. They have become the "coverup" which exonerated those in the military who really need to step up and take responsibility for what happened. No one higher than the level of staff sergeant has ever been tried and convicted.

"The Abu Ghraib photographs serve as both an expose and a coverup. An expose, because the photographs offer us a glimpse of the horror of Abu Ghraib; and a coverup because they convinced journalists and readers they had seen everything, that there was no need to look further. . . The underlying question that we still have not resolved, four years after the scandal: how could American values become so compromised that Abu Ghraib—and the subsequent coverup—could happen?"[82]

Through a series of interviews with the principal actors involved in orchestrating these aberrant photo-sessions as well as through staged re-enactments, the film once again takes up the twinned issues of moral responsibility and ethical action. Like Carter's image that came

[80] Hariman and Lucaites, No Caption Needed: Iconic Photographs, Public Culture, and Liberal Democracy. P. 182.
[81] Standard Operating Procedure, dir. Morris.
[82] Errol Morris, Standard Operating Procedure: Synopsis, 2008, Available: http://www.errolmorris.com/film/sop.html July 26 2008.

before them, the public and juridical debates around the Abu Ghraib photographs turned on role of the photographer in making/taking these despairing pictures. The "greater moral good" under which the United States claimed its 'natural' right to invade a 'despotic' regime was transformed by one quick pressing of the shutter button into a sleazy exposé of moral turpitude in which Americans and not the Other (as habitually projected by Western media) were the moral degenerates. The actual misery and death experienced by the detainees fell between the cracks of a more powerful story, which in a perverse twist of logic restored the Western subject [American prison personnel] to their privileged locus at the centre of attention, albeit not wittingly.

BUGGERED TAPES: What this incident exemplifies is the multiple capacities of the transmissional regime to induce radically different narrative tellings whereby what is imaged in a picture may not actually be of abiding interest but act as a trigger for inducing another set of events. The camera, computer, and the Internet did not so much as technically conspire with the soldiers to produce and transmit these images, but rather machined a moral discourse around the 'limits' of the ethical within contexts of war. The camera and its photographic operations in Morris's film become the placeholder through which questions of the ethical flow. Cutting this continuous movement by the capture function of the camera splits the data stream into a series of particularised and discrete images that are then able to connect with different discourses. The recording machine literally "kills time" as the virtual images moving continuously through the world "crystallize" into an actual photographic or video incident.[83] As Ariella Azoulay has similarly suggested in her recent book *The Civil Contract of Photography*, the ethical dimensions of the image are shaped by their precise entanglement with the transmission channels that have attached themselves to localised expressions of interest.[84] That Abu Ghraib and consequently Iraq remains an incomplete or unfinished story—a story still in a state of becoming—is further symbolised by the destruction of the Abu Zubaydah interrogation tapes during another incident of recorded torture. The documented and brutal interrogation of "suspected terrorist" Abu Zubaydah considered to have incontrovertible ties to the 9/11 plot and subsequent obliteration of these tapes by the CIA in 2005 links the Bush Administration once again with the unlawful acts of Watergate and the erasure of Tape 342. In fact one US investigator has even suggested that the Abu Zubaydah tapes had produced the "Rosetta Stone of 9/11", a comment that uncannily recalls a similar discussion around the 18-1/2 minute gape in Watergate Tape 342 (see *Chapter One: Archival Futures*).

In both cases the deliberate erasure of the tape is regarded as holding the key to unlocking truth and "exposing" the criminality implicit in the act of destroying the tape. At the same time, the suspicious destruction of recorded information is popularly viewed as "concealing" the extent to which senior government officials may have been implicated by the tapes, both by what was respectively contained therein [plans for infiltrating National Democratic Committee headquarters and plans for attacking the twin-towers] and how it was obtained

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[83] See Maurizio Lazzarato, "Machines to Crystallize Time: Bergson," Theory, Culture & Society 24.6 (2007).
[84] See Azoulay, The Civil Contract of Photography.

[illegal acts of break-in and illegal interrogation tactics]. These two separate but entangled incidents suggests that the Bush Presidency, like that of Nixon, are still in a state of becoming, that the full disclosure of the illicit deeds and criminality spawned in Iraq are but in an early stage of their medial transmission into history.

📖→ Z201

TORRENTS: The ubiquitous availability of digital recording technologies from photography to camcorders as well as easy access to media distribution systems such as web blogs and *YouTube* video uploading has dramatically altered the control and delivery of information today. In spite of coordinated efforts to create a media blackout around the activities of American ground troops and their subcontracted armed personnel in Iraq, media seepage has been gushing out of the Green Zone in [Bit]torrents. The embedding of journalists by mainstream American news affiliates has not been able to counter the volume of images and video clips being uploaded independently by troops, civilians, and of course the Iraqi population itself. Blogging by soldiers, for example, has provided altogether different vantage points into this story of war and counter-insurgency. In previous conflicts the task of reportage fell primarily to those professionals—journalists and cameramen—who were entrusted with its responsibilities as proven experts even when working as freelancers. Recording machines were essentially in the hands of their authorised agents, who were themselves answerable to the dictates of editorial news desks and their publics. This has fundamentally changed as unfolding events are documented increasingly by personal recording machines that are much more widely distributed then in previous times of war, even though information in general has been increasingly consolidated within global media empires. Of course lone acts of recording are still subject to seizure, confiscation, and censorship. But the sheer quantity of materials being recorded has turned the problem of the surfeit of data compiled by today's recording machines (discussed earlier in reference to CCTV) into a tactical form of informatic subterfuge. Even China, who maintains strict control of its media systems and runs a parallel Internet platform to that of the world-wide-web, has not been entirely successful in blocking the passage of data into alternative information channels.

It's a Question of Time

In the face of this mass redistribution of mobile recording machines into the hands of the many, the relevance of an anachronistic and cumbersome machine like the Muirhead K220 Picture Transmitter may seem of mere historical interest rather than one that is prescient for our times. Indeed what contemporary conjunction is opened in the larger field of new media and digital analysis through careful consideration of such a machine? What the preceding discussions have tried to explicate, in part, are the distinctive attributes that characterise the Muirhead's particular operations so that we can better understand the ways in which certain events come into being (prospectively as well as retroactively) through the recording and transmitting capacities of the machine. Pulling apart the machinic reveals different or seldom

used pathways that allow other narrative assemblages to cut into them—remixing and redirecting their flows and intensities—to generate recombinant new events and engineer new lines of development. The analogue transmitting machine exposes the manner of these entanglements as a multiplicity of *separa*te but *aggregating* forms and forces each of which is subject to its own unique temporal duration. Some events may only come into being long after the recording machine that inscribed the initial event has disappeared into the twilight zone of its technical obsolescence (see discussion of the lost lunar NASA tapes in the *Glossary entry Outer Space.*) The Muirhead, I have argued, is entangled with documentary image-events streaming from the past as well as those still lurking in a state of unrealised virtuality. It is in effect a multi-track player in which the ontological mismatch at its core between its haptic visual sensing and recombinant sonic transmissions can become the source of new meanings, new images, and new sounds.

Moreover, the present signalled by the digital era entered into a feedback loop with its analogue precursors at the constitutive moment when the Muirhead [to cite but one example] converted Kim Phúc's image-data mathematically into a series of electrical impulses; a technical slight-of-hand that not only anticipated contemporary digital systems but also preemptively narrated the ways in which such crisis-born images would be created and transmitted in the future, which is to say, out of the electronic ether of code. However, due to the extreme velocity and intensive computation of our contemporary digital devices, in which convergence creates the appearance that relations are temporally synchronous and spatially contiguous, an important understanding of machinic processes as evolutive appears to have to been lost or covered over. Information seemingly performs itself as a closed circuit between transmission and event in which there is no longer a possibility for "becoming". The event just is, arriving in de facto state of pre-actualisation. Near instantaneous feedback between the photographer and image-event, coupled with possibilities for easy file sharing truncate the time that may be needed for critical reflection and in turn critical resistance. The 'immediacy' of the digital induces a reactive mode in which the procedures of "click and send" or "rip and burn" often fire all too quickly. The Muirhead Picture Phone on the other hand is a machine for delaying time as each photographic object that entered into its scanning drum to exit as a sound-event was transmitted "over time". An interval that is crucial for understanding how the elongated temporality of the analogue might open up a necessary space of conscious criticality that is largely inaccessible to the regimen of the instant. Outmoded technologies like the Muirhead playback histories in slo-mo allowing us to grasp the thresholds of their articulating domains. These limit conditions bring the political into focus as itself an emergent machinic process whose event-status is subject to ongoing variation and change.

If I had to quietly summarise the provocations raised by such analogue recording, archiving, and transmitting machines I would suggest that they help us to discern and even materialise the need for a new politics of time.

Chernobyl

"The event by itself is problematic and problematizing."[1]—Gilles Deleuze

"We must say regarding the accidental, that there can be no scientific treatment of it."[2]
—Aristotle

"Our nuclear plants do not represent any risk. We could have built them at the Red Square. They are safer than our samovars."[3]—excerpt from a Soviet newspaper

THE MOST DANGEROUS FILM IN THE WORLD: Three days after the explosion and meltdown of Chernobyl's Nuclear Reactor Unit 4 on April 26 1986, filmmaker Vladimir Shevchenko was granted permission to fly over the 30-square km site known as the "Red Zone" in order to document the extraordinary efforts at cleanup by Ukrainian workers and volunteers.[4] When Shevchenko's 35-mm film footage was later developed, he noticed that a portion of the film was heavily pockmarked and carried extraneous static interference and noise. Thinking initially that the film stock used had been defective, Shevchenko finally realised that what he had captured on film was the image and sound of radioactivity itself.

→ FILM R101 CHRONICLE OF DIFFICULT WEEKS

"Radiation is a fatal invisible foe. One that even penetrates steel plating. It has no odor, nor color. But is has a voice. Here it is. We thought this film was defective. But we were mistaken. This is how radiation looks. This shot was taken when we were allowed a 30-second glimpse from the armoured troop-carrier. On that April night the first men passed here—without protection or stop-watches, aware of the danger, as soldiers performing a great feat. Our camera was loaded with black-and-white film. This is why the events of the first weeks will be black and white, the colors of disaster."[5]

Upon projection small flares of light momentarily ignite the surface of the film, sparking and crackling they conjure a pyrotechnics of syncopated spectrality. An act of radiological recording whereby the radical imprint of the disaster was inscribed directly into the emulsion of the film as decaying particles moved through the exterior casing of the movie camera.[6] Not a representation of catastrophe, but an actual toxic event in which a lethal dose of radiation was ingrained within the molecules of each and every silver halide particle. Contamination in effect dissolved the limits between the documentary and its subject as the film was instantly converted into the very matter—the radiological event—that it set out to observe and record. Shevchenko's film *Chronicle of Difficult Weeks* thus transformed quite literally into the most dangerous reel of footage in the world.[7]

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[1] Gilles Deleuze, The Logic of Sense, trans. Mark Lester, ed. Constantin V. Boundas (New York: Columbia University Press, 1990). P. 54.
[2] Aristotle, "Metaphysics," trans. W.D. Ross, The Works of Aristotle, ed. W.D. Ross, vol. VIII (Oxford: Oxford University Press, 1928). P. 1026b 3; 1027a 20; 1065a 6.
[3] Igor Kostin, Chernobyl: Confessions of a Reporter (New York: Umbrage Editions, 2006). P. 10.
[4] Chernobyl: Chronicle of Difficult Weeks, dir. Vladimir Shevchenko, The Video Project, 1986.
[5] Transcription of film voice-over from Chernobyl: Chronicle of Difficult Weeks, dir. Shevchenko.
[6] I'm indebted to Peter C. van Wyck whose brief citation of this filmic incident/accident provoked my search for the film footage and subsequent writing. Peter C. Van Wyck, Signs of Danger: Waste, Trauma, and Nuclear Threat, Theory out of Bounds, eds. Sandra Buckley, Michael Hardt and Brian Massumi, vol. 26 (Minneapolis: University of Minnesota Press, 2004). P. 97.
[7] Comment made by James Cahill & René Bruckner editors at Discourse, 2008.

Although the documentary provides us with an intimate view into the space of disaster, its pictorial mediation as filmic matter allows us to remain at a safe and objective distance to it. However the sudden distortion of its sound and image-flows by the Geiger-like interference of radiation displaces our initial confidence in its representational status as a fixed historical index or media artefact and installs in its place a sense of dread that what we are witnessing on film is in fact the unholy representation of the real: an amorphous and evil contagion that continues to release its lethal discharges into the present and future yet-to-come. As a radiological interface capable of conjoining bodily plasma with image matter, the contaminated film footage hurls us, unwittingly, back into the contact *zone* of the event.

ONTOLOGIES OF OUTPUT: Conceptualising this unexpected filmic rupture as a "capture of the real" rather than an act of cinematic inscription forces a rethinking of the ontological nature of mediatic matter itself. Contrary to film theorist André Bazin's well-known conceptualisations of film as "time-embalmed" and "change mummified" or Laura Mulvey's invocation of film as death [stillness] in the flickering guise of life, this particular sequence of irradiated film reminds us that the ontological moment cannot be fixed at 24-fps.[8] There is no ontological ground that we can return to in perpetuity, no film-substance to rewind and playback without loss or change, but only the movement, rhythm, and vibration of a topology of difference. An "ontology of the output" if you will, rather than one of beginnings, in which the lone condition of certainty is that of indeterminacy. For Aristotle the accidental (*sumbebekos*) was that which revealed the absolutely essential: substance. A concept that could be applied equally to physical events as well as states of being. Only by peeling away the inessential qualities of a thing could its essential attributes—the true nature of its being—be exposed. The accidental was thus a necessary precondition for accessing the ontological truths governing existence.[9]

"For Aristotle in his day and for us today, if the accident reveals the substance, it is indeed the *accidens*—what happens—which is a kind of analysis, a technoanalysis of what *subsat*—lies beneath—all knowledge."[10]

Paul Virilio shifts this Aristotelian movement between surface and depth to the domain of technoculture where he uses the invention of the accident as an analytical tool for discerning and critiquing a certain kind of knowledge that he equates with the positivism of science. I take my lead from his reworking of Aristotle but without necessarily detouring back through scientific innovation as the alter ego par excellence for thinking the contemporary accident. Rather than settling upon a dual axis that posits the modern accident as the corollary to the scientific invention, an ontology of the output forwards an understanding of these intertwined relations as operating in a continuous circuit that renders each contingent and relative. As curator for the 2003 exhibition *Unknown Quantity* produced for Fondation Cartier in Paris, Virilio presented gallery viewers with various doomsday scenarios each of which could be

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[8] See André Bazin, "The Ontology of the Photographic Image," Film Quarterly 13.4 (1960). P. 8. See also Laura Mulvey, Death 24x a Second: Stillness and the Moving Image (London: Reaktion Books, 2006).
[9] See Ross Hamilton, Accident: A Philosophical and Literary History (Chicago: University of Chicago Press, 2007).
[10] Hamilton, Accident: A Philosophical and Literary History. P. 3.

traced back to a questionable faith in the failsafe capacities of science and technology: from shipwrecks and oil tanker leakages, train derailments, airplane crashes and space shuttle explosions, chemical spills and air pollution, atomic testing and nuclear meltdowns, to natural and ecological disasters, including a potential world-ending collision with a meteorite or asteroid. While it is clear that Chernobyl is, among many things, a victim of just such technical hubris (to be discussed in greater detail later in this chapter) the accident for Virilio is always coded as a negative force. We are now, he says, living in the time of the global catastrophe, the planet a "dromosphere" of cataclysmic proportions hurtling out control.[11] In contrast, the accident in this thesis chapter is understood as a source of affirmation and change. Radiation induces the trembling dynamism of the future in the present as a kind of aberrant form of chemical and conceptual experimentation that can remix elemental histories and even transform the past. It enables us to consider the various ways in which the radiological event may be retroactively repotentialised and prospectively activated to author alternate stories and hopefully more complicated understandings of the unfolding actions of 1986. This is not the same as saying that a nuclear accident is a good thing, but rather that its radiological attributes as extensive, enduring over millennia foreground the requirement that any narrative redistribution which might connect Chernobyl to other radiological events must also take into account the real material properties that can be used to link such unrelated events over time. This is what is meant by the ontological inseparability of matter referred to in my introduction. Radiological entanglements are affirmative because they always real and although their particular circumstances may change they continue to be a matter of ongoing concern.

WHAT COMES AFTER COMES BEFORE: The nature of being—mediatic matter's ontological core as a record and index of past events—is thus converted into a dynamic ontology of becoming as radiation exerts its modulating influences over time. Shevchenko's film becoming itself a machine for time-travel or as Gilles Deleuze invokes in *Cinema 2: The Time-Image,* an artefact for machining time in which the "paralysed, frozen, petrified instance" of the 35-mm film-frame becomes "embryonic" teeming with the hallucinogenic elixir of alchemical life.[12] "It is as if the past surfaces in itself but in the shape of personalities which are independent, alienated, off-balance, in some sense embryonic, strangely active fossils, radioactive, inexplicable in the present where they surface, and all the more harmful and autonomous."[13] Arguably Shevchenko's documentation of the objective material reality of Chernobyl by the cinematic apparatus (lens, camera, film stock) sets up a variant of the discussion around "the ontology of the image" if read entirely within the instrumental register of film's technical capacities for recording the images and sounds that stream 'naturally' into the camera's receptors.[14] However to read his film radiologically, I argue, is to collapse the gap between representation and the real, form and content, signification and affect, so that the ontological

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[11] See Paul Virilio, The Original Accident (Cambridge: Polity, 2007).
[12] Gilles Deleuze, Cinema 2: The Time Image, trans. Hugh Tomlinson and Barbara Habberjam (London: Continuum, 1989). P. 166.
[13] Deleuze, Cinema 2: The Time Image. P. 113.
[14] See Philip Rosen's discussion of the misreading of Bazin's ontology of the photographic image as one of "technological finality" in "Subject, Ontology and Historicity in Bazin" in Philip Rosen, Change Mummified: Cinema, Historicity, Theory (Minneapolis: University of Minnesota Press, 2001). P. 9-10.

dimensions of the film extend beyond their accepted role as indexical trace to enter into a feedback loop with the *actual* material residue of the world. The radical recoding of the film by way of the nuclear accident insists that an analytic pursuit of Shevchenko's film entirely within the field of representation must be set aside in favour of an engagement with the film as an actual "event", perhaps even *the* radiological event that now matters given its propensity for continuous deformation and thus entanglement with other nuclear occurrences. "Media transmission is the becoming *of the event.*"[15] If Shevchenko's footage is Chernobyl's doppelganger—its evil celluloid twin—radiation must be understood as the force that both invented the film and triggered the accident in Reactor Unit 4 at the V. I. Lenin Nuclear Power Plant near Chernobyl. Radiation always comes first and last: is both cause and effect.

According to Deleuze, the [filmic] event does not "trace something that came before rather it actively creates the terrain it maps."[16] Likewise for Jacques Derrida it is the trace [writing] itself that comes before language [speech] so that what is being traced is not a discursive supplement to the materiality of the world but the movement of the world as it performs its own choreography. For both philosophers, what is commonly held as the metric logic of positionings (what comes after necessarily follows from what comes before) is thwarted or stunned into a kind of reversal. "The map [says Deleuze] expresses the identity of the journey and what one journeys through. It merges with its object, when the object itself is movement."[17] Shevchenko's film as such exceeds its objective status at documentary realism because it merges the subjective trajectory of the filmmaker's camera movements through the disaster site with the subjectivity of the terrain itself, given that radiation was imprinted directly upon all those who travelled through it, and indeed Shevchenko did succumb to its lethal force in 1999. *Chronicle of Difficult Weeks* becomes a de facto material witness to the industrial accident, one that is ontologically inseparable from the fatal landscape that it simultaneously pictures and maps.

KILLER FOOTAGE: Bazin intuits a similar shift in representation from an ontology of depiction to an ontology of the event when he discusses Thor Heyerdal's documentary chronicle of the *Kon Tiki* expedition from 1947 in which six Norwegians drifted from Peru to Polynesia on a crude wooden raft guided only by the ocean's currents. *Kon Tiki* writes Bazin "manages to be the most beautiful of films while not being a film at all" in that the cinematic document was an adjunct activity to the scientific purposes of the journey, but what it managed to capture were momentary glimpses of the real (or "the actual" following Deleuze).[18] While most of the footage was shot as the sailors were floating in calm waters, when something of significance did occur the camera was quickly abandoned. Bazin focuses his discussion upon a short sequence of frames in which the camera unwittingly captured the reflection of a shark-whale in

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[15] Brian Massumi, Parables for the Virtual: Movement, Affect, Sensation (Durham: Duke University Press, 2002). P. 81.
[16] Simon O'Sullivan, Art Encounters Deleuze and Guattari: Thought Beyond Representation, Renewing Philosophy (Basingstoke: Palgrave Macmillan, 2006). P. 35.
[17] Gilles Deleuze, Essays Critical and Clinical, trans. Daniel W. Smith and Michael A. Greco (London: Verso, 1998). P. 61.
[18] André Bazin, "Cinema and Exploration," trans. Hugh Gray, What Is Cinema?, ed. Hugh Gray, vol. 1 (Berkeley & Los Angeles: University of California Press, 1967). P. 160.

the water as it lunged towards the raft, an almost imperceptible rupture in an otherwise extended tedium of benign footage. This disruption in the image-flow can be conceptualised as a kind of cut that transforms representation into sensation, but without the repatriating operations that have theorised the cut as a form of filmic suture. What came before is ontologically different in kind and not merely degree from that which follows. What we witness is no longer a picture of the expedition, but the "pro-filmic presence of danger".[19] Shevchenko's damaged film footage performs a similar ontological feat as the sudden appearance of radioactive fallout converts documentary images into energetic matter; an unleashing of spectral forces that augurs immanent peril. Instead of continuing to operate as an indexical sign the image is mutated becoming itself an immanent part of the unfolding action or movement—in essence it becomes an event.

"Yet somehow the *Kon Tiki* is an admirable and overwhelming film. Why? Because the making of it is so totally identified with the action that it so imperfectly unfolds; because it is itself an aspect of the adventure. Those fluid and trembling images are as it were the objectivised memory of the actors in the drama. Does the killer whale, that we can barely see refracted in the water, interest us because of the rarity of the beast and the glimpse we get of it, slight as it is? Or rather because the shot was taken at the very moment when a capricious movement of the monster might well have annihilated the raft and sent camera and cameraman seven or eight thousand meters into the deep? **The answer is clear. It is not so much the photograph of the whale that interests us as the photograph of *danger*."**[20] [emphasis added]

→ K201 → FILM K202 KON TIKI

Bazin's preceding remarks link several strands of this chapter in ways that are fatedly useful for my purposes. Not only does the unexpected intercession of the whale's emergence within the filmic regime activate its latent virtualities producing affects in the body of the viewer that short-circuit the conventional channels of spectatorship organised around signification and representation, but he also foregrounds the role that chance will play in merging image with event. It is the incidental capture of a few frames, whether the menace of the whale or the thirty-three seconds of irradiated footage that permanently alters the equilibrium of each documentary film. Without warning the "dangerous supplement" of affect plucks the image from its data-stream and plugs it into the connective tissue of the filmic assemblage. Sailors forget the camera in order to attend to the hazard of the monstrous whale; Shevchenko forgoes the examination of his rushes to scrutinize the alien markings that mysteriously appear. These disruptions in the normative workings of the cinematic apparatus shatter the distinctions between the picture-making capacities of the machine and the pure image-making capacities of the event. As a device for "crystallizing time" the camera becomes itself a part of the temporal unfolding of the action that it initially set out to document. An amalgam between two different kinds of movement each of which harbours its own technicity: that of the medial apparatus with its image-sound recorders calibrated at precisely 24-fps and that of the topological terrain with its rhythmic flows, whether waves of seawater or pulsating radioactive emissions.

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[19] Comment made by James Cahill & René Bruckner editors at Discourse, 2008.
[20] Bazin, "Cinema and Exploration." P. 161.

"Because the making of it is so totally identified with the action that it so imperfectly unfolds; because it is itself an aspect of the adventure." (Bazin)

"The map expresses the identity of the journey and what one journeys through. It merges with its object, when the object itself is movement." (Deleuze)

RADIOLOGICAL TIME: Consequently time, and not just space, must also be figured differently when the identification between the making of the film and its subject matter fuse, when the object becomes implicated in its own adventure and movement. Radiological time in particular ceases to move according to the disciplined march of the clock as discrete units of measure extruded through geometrical space and instead folds back onto itself creating anarchic feedback loops between radically non-contiguous temporalities in which the future-yet-to-come is overlaid onto the past in a process of continuous modulation. The bursts of radiant energy fixed by Shevchenko's film are thus not the residual traces of a past that has come to haunt future recordings in the telegraphic manner that sound and image ghosts typically appear within the analogue regime, a phenomena in which previous recordings still cling to their magnetic substrates when errant particles escape their full 'erasure', but the spectral forces of the future-past archived by the continuous present.[21]

As a "radioactive fossil" whose toxicity can endure millennia, the film's indexicality is bipolar registering both the "this was" of the past [the initial accident] as well as the "this still comes" from the future [ongoing contamination]. Film typically functions as a form of intensive archival storage that compresses history within each of its frames. Radioactivity however with its extended lifespan of 10,000 years, ultimately recasts Bazin's ontological conceptualisation of film as "change mummified" and posits in its place an ontology of "zombification" in which the original danger of contamination is not so much mummified or preserved as it is brought back to life to taint future handlings of the film and its screenings.

→ **F201**

Today Chernobyl's Nuclear Reactor Unit 4 is itself entombed within a metal-clad structure that is ominously named the "Sarcophagus". Both a burial chamber to the many 'volunteers' who died trying to quell the fire and seal-off escaping contaminates as well as a form of architectural embalmment aimed at mummifying its radioactive contents. It literally is a death-trap albeit a decaying one, whose breach will not be the result of tomb-raiders but an act of vandalism perpetrated by the very radioactive materials that it houses. When the core melted, its uranium seeped into the sand bedding below the reactor temporarily petrifying its radioactive urges in a silica bond. Now these solid forms have largely disintegrated creating a subterranean terror of radioactive dust clouds that lie in wait for their atmospheric release. Given the failing state of the Sarcophagus, the opening of the tomb and unleashing of its evil

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[21] Sound-ghosts are a memory effect of magnetic recording in which the imprint of a previous recording mysteriously reappears. This effect was first reported in 1947 when new kinds of tape were introduced with varying degrees of coercivity or resistance to demagnetisation that in turn permitted stray microns to gather along the outer edges of the tape and haunt through subsequent recordings. Vanhanen, Janne. 2005. *Loving the Ghost in the Machine/Aesthetics of Interruption.* ctheory 2001 [cited October 2005]. Available from www.ctheory.net/articles.aspx?id=312. P. 5.

spirits may happen sooner rather than later. What it guards through containment is ironically also that which it guards against—the virulent reanimation of its airborne radioactive particles. "Nuclear materials" writes Peter C. van Wyck in *Danger Signs* "stand in relation to their containment only very imperfectly—there is always leakage."[22]

→ T201 / T202 → E202 / E203 / E205

Microfiche vs. Database

Shevchenko's archival recording of the Chernobyl disaster only exists today, that is to say posthumously, because it was captured by analogue means. The extremely high levels of radiation within the "zone" would have immediately erased any digital video-data, which is always stored magnetically. It is not possible to archive the nuclear with digital technology if the hard discs or tape used for data storage come into contact with the radiological. Not only does Shevchenko's film record the immediate aftermath of the Chernobyl nuclear accident and the efforts at containment by workers and volunteers or biobots,[23] but in carrying actual traces of the toxicological within its emulsive layers it also produces an archival double as the epistemological dimensions of the event are folded into its ontological meta-matter. Only analogue storage mediums are amenable to such ongoing acts of topological deformation. Only film's material substrates can archive multiple superimpositions while still retaining the expressive singularity of each successive layering. The digital while not immune to interference and noise must by definition recalculate and absorb this intruder-data into its coding chains, whereas the deviance of [radiological] interference within analogue domains sits side-by-side with its proper subjects of inscription since there is no mechanism for reintegrating extraneous information. These two simple observations are not being forwarded to make the case for the "superiority of the analogue" per se but they are worth noting because they replay a troubling aspect of the analogue-digital distinction as merely a difference in degree when in fact it is a fundamental difference in kind as is revealed by the following scenario.

Today any database search engine will return the nuclear accident at Chernobyl when the date "April 26 1986" is input into its search parameters, whereas a microfiche review of Soviet (*Pravda, Izvestia*) and international newspapers from the same period reveals a time-lag of 19 days before the event registered publicly in print that a major nuclear accident had taken place. Although an orbiting American satellite took night-time images of the reactor explosion and meteorologists and scientists recorded extraordinarily high levels of radioactivity within days of the meltdown in Sweden and Germany, this information was not linked to Chernobyl for almost three weeks since Mikhail Gorbachev and the Central Committee largely withheld news of the disaster. On April 29, in response to rapidly growing rumours circulating outside of

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[22] Van Wyck, Signs of Danger: Waste, Trauma, and Nuclear Threat. P. 19.
[23] 'Volunteers' conscripted to clean up the zone were called biobots, an expression that referred to the fact that they replaced the mechanical robots initially sent into the reactor core, but whose electronics immediately failed due to the high levels of radioactivity. If technical machines were completely incapacitated by the toxicity of the site it is no wonder that the minimal protection worn by human beings was insufficient for countering the massive exposure they received, leading each to a certain and premature death.

the Soviet Union that "something had happened at Chernobyl", did Gorbachev deign to place a series of discrete notifications with five Soviet news agencies indicating that a minor incident had occurred at Chernobyl. "An accident occurred at the nuclear plant in Chernobyl. One of the reactors had been damaged. Measures have been taken. A governmental commission is inquiring."[24] In reality the accident at Chernobyl was massive, releasing higher levels of radioactive contaminants into the environment than any preceding radiological event whether the detonation of two atomic bombs over Hiroshima and Nagasaki in 1945, the fallout from atmospheric nuclear weapons testing in the years 1952-63, the blast at the Mayak plutonium production and reprocessing facility in Siberia in 1957 (which had held the previous record for greatest ecological damage by radiation) or the partial reactor core meltdown at Three Mile Island in 1979.[25] By severely underplaying the gravity of the situation, tragically delaying reports that a substantial nuclear explosion had taken place, and downplaying the potential for contamination a tragedy of far greater consequences ensued. For those working at the Chernobyl nuclear plant site or living in the adjacent city of Pripyat this time lag would prove fatal as malignant cells metastasized, seeding their defects throughout the zone and eventually airlifting their malevolence across the borders of the Ukraine into Belarus and Europe.

IN PRAISE OF OTHER SPACES: In a rather deserted and dingy corner of the university library basement sits an abandoned fleet of aging and rather unwieldy machines known as microfiche viewers. Only by scouring each small spool of film in the library's periodical and newspaper collection from April 26 1986 onwards to see what 'newsworthy' items made the front page each day did I finally come to realise that Chernobyl never happened, at least not by any publicly reported accounts on that particular day. I might add that the library's microfiche collection is extensive and includes Soviet as well as other non-Western newspapers. Mine was not a mediatic discovery akin to Baudrillard's infamous declaration that the first Gulf War never happened due to the hyper-reality of an image-world that overcodes the real to such an extent that it eventually surpasses it and in doing so annuls it. No, my microfiche findings pointed quite literally to the fact that there seemed to be no public record of the nuclear accident having ever taken place on that day. This realisation spurred me into examining each spool of film subsequent to April 26 until I finally came across a substantial printed reference to the horrific events at Chernobyl 19 days later. On May 14 President Gorbachev first appeared on state television with the belated words "we have been struck by disaster" and then again as the lead story on the front pages of newspapers the following day.

→ TV BROADCAST G202 GORBACHEV'S ANNOUNCEMENT → M201 / P301

[24] Media announcements were given to the Pravda newspaper, state television, the Novosti press agency (APN) and the Tass Agency and their correspondent in the Ukraine. Reporter Igor Kostin who worked for Tass took the first photographic image of the destroyed reactor at Chernobyl. Like Vladimir Shevchenko his film too was riven by radioactive contaminants, most of the roll incinerated and unreadable. See Kostin, Chernobyl: Confessions of a Reporter. P. 10.

[25] See Jim T. Smith and Nicholas A. Beresford, Chernobyl: Catastrophe and Consequences, Springer-Praxis Books in Environmental Sciences (London: Springer, 2005). P. 25.

While the obvious tragic consequences of this delay go without saying, it was the process of carefully scrutinizing each reel of microfiche that offered the conceptual breakthrough that I was looking for when I fully grasped the implications of this time-lag and how it could assist me in thinking through the notion of the "event". A revelation that would never have been available to me had I relied solely upon digital database search engines which had retroactively corrected the time-line and erased the gap. This experience was also an important reminder for the need to develop relations of proximity to our research materials; that getting closer to my subjects by hanging out in dusty library basements and getting my hands dirty so-to-speak could be much more useful than surfing the expedient domains of the digital on my shiny laptop.[26]

WHEN EXACTLY: Moreover, this temporal disjunction raises the crucial question as to when Chernobyl actually took place: on the day the reactor core failed or on May 14 when the event came into public consciousness? The digital would answer unequivocally April 26, but the analogue is somewhat less certain and prone to vacillation since it comprehends that the facticity of the date was a retroactive production. Arguably something took place on April 26 1986 but did Chernobyl as an "event" occur on that date? If we follow Brian Massumi's assertion that "transmission" is a necessary mediator for bringing the contemporary event into actualisation (see discussion in *Introduction*) then my experience in the microfiche library is a rather prescient example for thinking about how this interval of transmission actually does its work as a potentialising agent for inducing the event.

→ VIDEO I101: *TIME LAG [DOCUMENTING CHERNOBYL]*

The metaphysical gap between the physical meltdown of the reactor core—its ontological articulation as radioactive matter—and the delay in bringing news of the accident into public consciousness—its epistemological performance as knowledge—further emphasises the transgressive nature of the gap as undoing the logic that binds time to space as a naturally inhering unity. Clearly the temporal dimensions of any occurrence can operate according to vastly different time-scales, whether the relation to a given moment is consciously actualised and comprehended or subsists in a state of unrealised virtuality. History is littered with examples of retroactive mediation whereby information coming from the future [after the fact] has been used to redress wrongs or recalibrate our collective understanding of how a particular event went down. From the "Pentagon Papers" which exposed, amongst many dubious deeds, the illicit carpet bombing campaigns into Cambodia during the Vietnam war by the US, to the amateur video shot by George Holliday of the Rodney King beating that made evident the extreme racism and brutality of the Los Angeles Police Department towards an

[26] Yet even fieldwork in a library is probably deficient in terms of what other kinds of materials might be unearthed and potential research pathways opened-up by more direct encounters with my research subjects in the field. To that end, I plan to travel to the Ukraine in 2009 to document the site of the disaster and reshoot the original film sequence with the intention of producing an archival film installation that will be exhibited in 2010. Through the process of archival re-imaging, the past is brought into the present by way of documentation and exhibition that recasts the temporalities of the theoretical arguments forwarded by the written work. This trip marks an important milestone in the overall thesis project as it will also be a time to "test" the knowledges that have been acquired given that my theoretical preoccupations will come into direct contact with the subject of my research into Chernobyl for the first time.

unarmed black man (March 3 1991), and more recently to the taser-death of Polish immigrant Robert Dziekański killed by Royal Canadian Mounted Police in the customs hall of Vancouver International airport when he appeared confused and agitated. Once again an amateur video revealed the true nature of the violent actions that took place that day (October 14 2007). Although the RCMP initially confiscated the footage shot by Paul Pritchard he eventually obtained its return via court order and made public its inflammatory contents. It goes without saying that there are still innumerable incidents lurking in the recesses of history that may yet undergo radical reformulation when a media transmission of a certain kind, not necessarily an electronic one, but rather media understood as a form communicative relay between temporalities, might shed new light upon what originally transpired.

I therefore propose that the temporal dimensions of the nuclear event are always multiple and may be figured onto variable expressions of time as intensively quantitative (the digital database entry that returns us repeatedly to a specific date—that of the accident), qualitatively extensive (the time-lag or interval of transmission that characterises an event as emergent), and the concretization of time as a condition of its spatial articulation (the actualisation of the radiological event as a singular historical episode anchored within a precise geography). These attributes hold whether we are talking about Hiroshima, Three Mile Island or Chernobyl.

Events & Accidents

"Events are like crystals, they become and grow only out of the edges, or on the edge."[27]—Gilles Deleuze

In *The Logic of Sense*, Deleuze posits a distinction between bodies concerned with their "states of affairs" located in actual geometric space and present in time, and incorporeal beings, which he regards as "pure events" constrained neither by space nor time. The kinds of bodies that manifest "tensions, physical qualities, actions and passions", that exist in space and are available in time, are also the kinds of bodies for whom other bodies are a matter of concern.[28] A tree being a cause for another tree in disseminating its seed for the purposes of growing a forest, or a cause for the bird that builds its nest within its sheltering branches, or for the human that seeks its shady arbour on a sunny day. Although each body is a causal agent for, or recipient to, the other's actions, the results of their encounter can also create effects of a different kind that are intrinsic without being substantive. "These *effects* are not bodies, but properly speaking, "incorporeal" entities. They are not physical qualities and properties, but rather logical or dialectical attributes. They are not things or facts, but events. We cannot say that they exist, but rather that they subsist or inhere."[29]

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[27] Deleuze, The Logic of Sense. P. 9.
[28] Deleuze, The Logic of Sense. P. 4.
[29] Deleuze, The Logic of Sense. Pp. 4-5.

AN EMERALD FOREST: One of the many examples that Deleuze offers to help us conceptualise the event is the seasonal change of pigmentation in a tree. Although we might logically be tempted to designate the status of the event to the tree's change in colour from brown to green, this is in fact contrary to Deleuze's conception, which is preoccupied with verbs [becomings] and not nouns [being]. In spring we witness the tree becoming green, but this according to Deleuze is only a transitory surface effect, "an expression of the event's actualisation" induced by the conjunctive relations between climate, soil conditions, temperature, and the situation of its planting.[30] Rather than designating a quality in the thing by saying that "the tree becomes green" or is "now green" which only refers to its physical state of affairs as a qualitative predicate, if we say instead "the tree greens" we invoke an attribute that performs itself as a verb. To green is "the event expressed by the verb."[31] It is the becoming green of the tree that constitutes the event, rather than the quality green which is a mere actualization of the various conditions of growth that gather to express themselves as surface features.

> "With every event, there is indeed the present moment of its actualization, the moment in which the event is embodied in a state of affairs, an individual, or a person, the moment we designate by saying "*here*, the moment has come." The future and the past of the event are evaluated only with respect to this definitive present, and from the point of view of that which embodies it. But on the other hand, there is the future and the past of the event considered in itself, sidestepping each present, being free of the limitations of a state of affairs, impersonal and pre-individual, neutral, neither general nor particular, *eventum tantum*. . . . It has no other present than that of the mobile instant which represents it, always divided into future-past."[32]

Events are inherent to all processes of change within movement, whether naturally occurring or artificially induced. An event revels itself when a change takes place in an ongoing series. For example, within an organic system the abnormal growth in cellular tissue that mutates into a malignant tumour becomes an event, while variations in the organisation of nonorganic entities that produce new rock formations out of shifting tectonic matter or that modulate weather patterns into tornadoes may also be termed events. It is neither possible to determine the absolute cause of the event, nor pinpoint its moment of inception, but we can discern it affects. An event as such doesn't refer to a de facto condition that operates exclusively on one register within delimited temporal boundaries (an incident that can be factually named and date-stamped) but to a change in the intensities of relations between elements that creates a relay connecting the whole to its parts. The event both moves through time [Chronos] but is also in contact with the time of actual occurrences [Aiôn].[33] Radiation's almost infinite capacity for extension and duration stretches over Shevchenko's irradiated film-score to connect Chernobyl as an actual event with other atomic episodes, both retroactively repotentialising them and prospectively activating them. Each time we rescreen the damaged film sequence, its pastness is repatriated as a form of continuous presentness that both supplements the

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[30] See entry on the event by Cliff Stagoll in Adrian Parr, The Deleuze Dictionary (Edinburgh: Edinburgh University Press, 2005). Pp. 87-88.
[31] Deleuze, The Logic of Sense. P. 21.
[32] Deleuze, The Logic of Sense. P. 21.
[33] See Gilles Deleuze, The Fold: Leibniz and the Baroque, trans. Tom Conley (Minneapolis: University of Minnesota Press, 1993). Pp. 76-82.

original event and extends its radioactive reach into the future through its virtual amplifications.

ROCKY EVENTS: Unlike other philosophers for whom the event represents a radical break in historical continuities, a fresh-start or the commencement of something altogether different, the event for Deleuze is not a new occurrence or beginning that cuts its ties with the past but rather a "change in waves resonating through a series".[34] An event creates an alteration in a set of ongoing processes that allows it to trace many different pathways while still retaining certain resonances (conceptual and material) that enable linkages over time. The shifting of the tectonic plates is an event for Deleuze because it alters the geological processes that govern the earth's ongoing terrestrial movements. While it may make deep changes to the earth's geological infrastructure, it doesn't entirely unmake the metallurgical properties that continue to shape such geological formations [difference and repetition]. Its novelty arises not in its unprecedented newness, its telluric reconfiguration, but in the ways that it changes previous topologies, its mode of selection or capture and the manner in which it makes them intelligible. In 1915, Alfred Lothar Wegener, a German meteorologist, made the daring proposition that the continents were once incorporated into a super continent called "Pangaea" which had broken apart creating pieces which were still slowly drifting. His proposed theory of "continental drift" was roundly rejected, and relegated to the realm of fiction until the 1960s when, as Isabelle Stengers puts it, "the movement, not of the continents but of the plates on which they rested, confessed to their mobility."[35] The event conceptualised as Deleuzian was not Wegener's posthumous vindication, but the actual movement of tectonic plates as they retroactively performed his thesis or as Stengers calls it his "propositional fiction".

DUDE YOU'RE OBSCURE: Contrary to the Cartesian inheritance of causality characterised by an abiding concern with "clarity and distinctness", Deleuze offers us "distinctness and obscurity", a philosophic intercession that is crucial for understanding his theorisation of the event. One that is also indebted to evolutionary thinking [in my mind] in terms of the notion of species change as movement without any a priori "progress of purpose" or implanted sense of direction. Both Darwin and Deleuze share an interest in opened-ended systems and regard as indeterminate the forces of change that impel each of us towards an uncertain future. Evolutive lineages, like events "highlights certain changing relations while making others dimmer."[36] Whereas for Alan Badiou (the other major philosopher of the event) who looks to set theory to formulate his conceptualisation of the event as a relationship between its situation and its site, only happenings such as May 1968 or the French Revolution can qualify as events because they "either rupture the site's being, the systems that preceded it, or they force the situation to reformulate itself, creating, in other words, a new set to which it

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[34] James Williams, Gilles Deleuze's Logic of Sense: A Critical Introduction and Guide (Edinburgh: Edinburgh University Press, 2008). P. 1.
[35] Isabelle Stengers, Power and Invention: Situating Science, trans. Paul Bains, Theory out of Bounds, eds. Sandra Buckley, Michael Hardt and Brian Massumi (Minneapolis: University of Minnesota Press, 1997). P. 137.
[36] Williams, Gilles Deleuze's Logic of Sense: A Critical Introduction and Guide. P. 7.

belongs."[37] Even though major events such as the French Revolution are extremely multifaceted given the various heterogeneous elements that must necessarily come together in very particular ways in order to bring about an event like a revolution, Badiou still regards these events as a distinct "unit of one" (not as a modulation within an ongoing series of flows) because they include all the things related to this site as a set of multiple, coexisting entities, articulations, and processes that in turn make up its situation.

"The event is thus clearly the multiple which both presents its entire site, and, by means of the pure signifier of itself immanent to its own multiple, manages to present the presentation itself, that is, the one of the infinite multiples that it is. . . *If there exists an event, its belonging to its situation of its site is undecidable from the standpoint of the situation itself.*"[38]

The prevaricating nature of the event's attachment to its situation (according to Badiou) thus performs a "double function" as either that which "either evokes the void" and destroys history or that which "interposes itself between the void" and mediates history bringing about in both cases a new model or set from which history moves onwards again. In contrast, Deleuze's contribution to rethinking the event is useful for my purposes because it, like entanglement, is concerned with temporal disjunctions and spatial configurations that are non-linear and non-contiguous. Although certain entanglements must perish in order to provoke different events into actualisation, this movement is not guided by a mathematic ontology of conclusions and recalculation as per Badiou, but a dynamic ontology of the output that emphasises the becoming of a different kind of event which is none the less still suffused by the chromaticism and rhythms of the past and even derives its momentum from these lingering resources. This is a reciprocal process in which the event both transforms the series that it courses through and is in turn affectuated by its encounter with these serial flows. The meltdown of the core at Chernobyl was not the start of a unheralded series of nuclear reactions, but rather a dramatic change in the energetic output between subatomic particles which had been previously been controlled and contained. The impact of the accident rechannelling the nuclear pathways that the radiation took from self-contained micro-explosions or fission to its externalised macro-extensions as radioactive dust clouds.

ACCIDENTS ARE NOT EVENTS: In *The Logic of Sense*, Deleuze actually makes a specific distinction between the event and the accident. He regards the former—the event—as ideal having an "eternal truth" whose time, unlike that of the accident, is never simply the present that provokes it [the accident] and brings it into existence. There are no accidental events but merely events that bear upon accidents and define their conditions—the event is the *problematic* that *problematizes* the accident. But just how does the event come to trouble and ultimately "induce" the accident?

For Deleuze an ideal event is a singularity that recomposes itself with other singularities to produce a series. When two series come into contact with each other they "resonate" redistributing their collective singularities between them. In doing so, they evolve a different

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[37] Slightly modified citation from Hamilton, Accident: A Philosophical and Literary History. P. 6.
[38] Alain Badiou, Being and Event (London: Continuum, 2007). Pp. 180-181.

event whose intertwined nature produces what could be characterised as a kind of assemblage, an entity that is discernable only after the fact, by virtue of its effects. For example, the "transition" between winter and spring "communicates" with the pressure building up inside trees that eventually impels the flow of sap into creating a new assemblage called "the sugar bush". "Singularities are turning points and points of inflection; bottlenecks, knots, foyers, and centers; points of fusion, condensation, and boiling; points of tears and joy, sickness and health, hope and anxiety, "sensitive" points.[39] However as Deleuze notes singularities are not states of expression that can be attached to speakers in discourse, to their psychological or physical states of affairs or to designate the properties of a concept such as the centre of a curve within mathematics. They are "indifferent" to signifying distinctions that order the world and govern its percepts. "The singularity belongs to another dimension than that of denotation, manifestation or signification. It is essentially pre-individual, non-personal, and a-conceptual."[40] That is why the accident (nuclear or otherwise) can never correspond directly to the event because that would take the event into the denotative domain, the domain of its actuality, of its general circumstances as an industrial accident and its particular malfeasance as Chernobyl. "If the singularities are veritable events, they communicate in one and the same Event which endlessly redistributes them, while their transformations form a *history*."[41] Although the event acts upon a series of mobile virtualities, transformations arise when two or more of these series communicate with each other creating a change in their wave-like resonances that can mutate and discharge its singularities into creating a new series, a different event. It is within this surfeit expression of movement that we can discern a history that might properly be called an actual event or an historical incident. However, even ideal events are subject to critical thresholds that can provoke their virtualities into "precipitating" an actualisation that might eventually "crystallise" into an accident. Such transformations [histories] are generated by the incoming events of the future (by the intercession of another series) that can determine a different distribution of their effects. This redistribution manifests itself in the form of transactions that are operative in the world and visible as attributes of its material reality.

The nuclear event, conceived as Deleuzian, exists within the dynamic virtualities or immaterial effects produced by the "actions and passions" occurring between incorporeal bodies: the energetic combustion of excited particles. Whereas a nuclear accident refers to the actual movement of physical forces as they reconfigure themselves transforming radiant energy into defective material forms [accidents] that can be allocated to precise geographic coordinates within historical time. Events are extensive and obscure, accidents intensive and distinct. As mentioned previously, Massumi, in working through Deleuze, contends that media transmission is both a necessary condition and field of potential out of which an event emerges. That the event only "becomes" through its an entangled performance between different modalities of transmission (speech acts, newspapers, television coverage, etc.) that bring it into articulated presence as an actuality, an industrial accident that can now be

[39] Deleuze, The Logic of Sense. P. 52.
[40] Deleuze, The Logic of Sense. P. 52.
[41] Deleuze, The Logic of Sense. P. 53.

named. The event's conversion from an incorporeal entity into an accident is thus constituted by the transmitting apparatus's capacities to actualise any of its virtual tendencies in the present. As such the establishment of Chernobyl as a nuclear accident, in contra distinction to its emergent status as a radiological event, required its coupling to an external transmissional regime to bring it into history. Whether this transmitting force was itself the winds that blew radioactive isotopes across the Ukrainian border into Belarus or the technologies of media delivery that retroactively acknowledged that something sinister was afoot, both chemically and politically.

THERE IS NO EVENT-HORIZON: Because of the invisible and migratory nature of the nuclear accident the movement of its airborne contaminates travels at a much faster pace than that of most public safety dispatches or even awareness that something dangerous has happened. It is as if the accident only appears retrospectively after the fact. The nuclear accident troubles the telling of history because its transmissional flows can never be entirely administered by the media apparatuses used to communicate its event-information, in that its telematic streams are also to be found within the radiological dimensions of its technogenic matter, in irradiated environments, warped biological systems, deteriorating structures etc. Of course any event or disaster is never simply relegated to its delimited space-time within the archives of history but is always capable of being extracted and relinked to other signifying channels to produce new meanings and new narrative distributions. However the nuclear event produces artefacts that are of fundamentally different nature given the 10,000-year shelf life of radioactivity. Unlike other historical relics that can be coaxed into revealing the limits of what might have been thought at a given time, the radiological fossil does not require the mediating gestures of the living historian to ask the right or relevant questions about the past, to exhort the testimonial from the trace.[42] The radioactive does its work prospectively and if it leaves any evidentiary traces of its clandestine passing it only does so in times to come–when it is often too late to mitigate against its damaging effects.

The meltdown of the reactor is not limited to the event space-time of the Ukraine in 1986 given that the radioactive, in transgressing the boundaries of nuclear containment, has the transmissional and chemical capacity to reactualise the catastrophic event over and over again for years to come. There is no event-horizon or point of no return for a nuclear accident. There is *only the return.* In this regard each nuclear accident is always-already preemptively inscribed within those event-making transmissions yet to come as well as those that have already perished. The future is contracted to the past by way of a radiological present, which brings the future-past into actualisation as an ongoing-effect—a nuclear accident lying in wait.

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[42] See Bernard Stiegler summing up one of Jacques Derrida's points in "Phonographies: Meaning—From Heritage to Horizon," in Jacques Derrida and Bernard Stiegler, Echographies of Television: Filmed Interviews, trans. Jennifer Bajorek (Cambridge: Polity Press, 2005). P. 100.

RADIATION EXPOSURES: The sequence of irradiated footage in Shevchenko's documentary converts celluloid matter into a chemically charged material witness whose altered ontological status can testify to the accident beyond the signifying level of representation. Contamination at Chernobyl thus produced a series of troubling exposures: in literally exposing the light-sensitive film emulsion to the fierce intensity of radiation it also exposed—made visible and rendered audible—forces whose spectral presence usually transcends the threshold of human perception. The dread of the nuclear has always been tied, in large part, to the mysterious invisibility that portends its apocalyptic power. Unseen and silent it invades like a stealth force that can alter the molecular composition of the body itself, rearranging atoms and mutating chromosomes. The nuclear horizon engineers a space of abject horror, a terror aroused by the threat of annihilation in which the anxiety of corporeal transmutation finds disturbing expression in the alchemical transformation of Shevchenko's film from a historical record into a radiographic archive, one, whose memory trace was radically recoded when the chemistry of the film's emulsive surface was mixed with the deadly atmospheric cocktail of Chernobyl. Radiation is thus returned to the event as its constitutive force, rather than a mere by-product of its nefarious behaviour.

In the political fallout that eventually attended the tragedy at Chernobyl the discourse of radioactivity also 'exposed' the hubris of the Soviet state which both hid the disaster from the public, acted far too slowly in disclosing and managing the risk, covered up negligence in the reactor's operational procedures, and ultimately exposed millions to unnecessary poisoning especially as the contaminating winds blew northwest across the Ukrainian border into Belarus. Today an estimated 3.5 million Ukrainian people are still plagued with maladies linked to Chernobyl many of whom have received little if no compensation for their suffering.[43] Since activities were underway for May Day celebrations throughout the USSR, Soviet officials felt it would dampen festive spirits if news of the nuclear meltdown and potential health threats were publicised during this period. Iodine pills, which can absorb and neutralise radioactive isotopes were not distributed until after the celebrations ended, that is, until it was too late. As a result atmospheric molecules carrying radiation entered into the respiratory systems of thousands of unsuspecting hosts. Children, it turned out, were the most susceptible to this migrating airborne malevolence. Radiation affects cells in the thyroid glands above all, which in young people are in an active state of duplication or growth. Consequently irradiated cells were turned out at unprecedented metabolic rates, spawning in turn, equally abnormal increases in the incidents of thyroid tumours among children. The space of the abject in the case of Chernobyl was signified not by the maternal body whose abundance reminds us of our own mortality as is theorised in the classical psychoanalytic formulation, but by the distorted plenitude of malignancy, a much more insidious reminder of our certain demise.

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[43] See Adriana Petryna, Life Exposed: Biological Citizens after Chernobyl (New York: Princeton University Press, 2002).

"Dmytro knew the level of internal radiation he had received on the basis of a count of aberrations in his chromosomes. He calculated his lost work capacity and amassed diagnoses. He referred to the radiation in his body as a "foreign burden" (chuzhe hore)—unnatural in origin and creating a new locus where "there is no peace." He was but one of many left to assess, but without an exact numerical equivalent for, his foreign burden."[44]

"This happened in the Zone. . . We're people no one understands, in hospitals, in clinics. Our memory is gone. You forget everything—we walk like corpses."[45]

THE ZONE: In an uncanny premonition of things to come *Stalker* (released in 1980), the final film shot by Andrei Tarkovsky in the Soviet Union, stakes out the apocalyptic terrain that would become the "Red Zone" of Chernobyl a full six years prior to the actual meltdown of the reactor core. A mysterious breakdown at the fourth bunker is advanced as the cause for the bleak landscape of *Stalker's* Zone. Tarkovsky's cinematic treatment of the Zone is drawn from the rumour of an explosion at the Mayak nuclear waste facility near Chelyabinsk in 1957, which was said to have created a vast ecological nightmare. As was the case with Chernobyl, Soviet leadership concealed evidence of the accident and denied reports of human casualties. But unlike the time lag that attended Chernobyl, official confirmation of the chemical fallout at Chelyabinsk was only made public in 1989—thirty-two years after the damaged landscape first testified to the presence of radionuclides in its water table and agricultural produce.

Stalker is thus a visual interface between two virtualities, a psychic cinematic medium channelling two historic realities: that of Chelyabinsk as unsubstantiated rumour and that of Chernobyl as accident-yet-to-come. In a rather strange alchemical détournement, the illusory domain of film was once again transformed into the realm of the actual, in that it brought the virtual into presence as a felt-effect, whereas the two nuclear accidents that bracketed *Stalker* remained in a suspended state of latency, only to be actualised after the fact—after a time-lag of a certain duration. Although the industrial accident at Mayak had already taken place prior to the production of *Stalker* in 1979, the denial of its having ever happened by the Soviet government temporarily erased it from history as an actual event with real consequences. But of course thousands could intuit that something dangerous had happened in the vicinity, not by way of any direct or established knowledge of the incident but by means of its corporeal effects: physicochemical changes in bodily matter.

→ B201 → B202 / B203

MALFUNCTIONS & ERRORS: What is of parallel interest in back-spooling Shevchenko's documentary through the reels of Tarkovsky's science-fiction epic is not merely the prophetic account of nuclear disaster that arcs between the two (which certainly merits further investigation) but also the tale of defective film stock that afflicted them both. As the story goes Tarkovsky's German producer supplied him with a new kind of Kodak stock but then "disaster struck" when the artesian well-water required for the film's processing ran dry due to a malfunction at Mosfilm. Not only is his film stock prospectively entangled with the heavy-

[44] Petryna, Life Exposed: Biological Citizens after Chernobyl. P. 35.
[45] Account given by a Chernobyl maintenance worker in 1992. Petryna, Life Exposed: Biological Citizens after Chernobyl. P. 3

water chronicles of Shevchenko's documentary yet-to-come, but the technical breakdown at the pre-eminent Russian film studio gestures towards the future failings of technology that will result in the accident at the Chernobyl nuclear power plant. "What is error if not always false recognition... Error, therefore, pays homage to the 'truth' to the extent that, lacking a form of its own, it gives the form of the true to the false."[46] An error masquerading as technical competency at Mosfilm lulled Tarkovsky into a false sense of security that his film would be fine. But apparently *Stalker's* exposed materials languished in an unprocessed state for 17 days (unbeknownst to Tarkovsky) as its filmic matter rapidly deteriorated. "In a word, the whole material for the first part ended up on the scrap heap."

"The review of the ruined footage ended in a scandal. Tarkovsky, Rerberg, the Strugatskys, and Tarkovsky's wife Larissa were all sitting in the projection room. Suddenly one of the Strugatskys turned towards Rerberg and asked naively: "Gosha, and how come I can't see anything here?" Rerberg, always considering himself beyond reproach in everything he did, turned to Strugatsky and said: "And you just be quiet, you are no Dostoievsky either!" Tarkovsky was beside himself with anger. But one can understand Rerberg. **Imagine what it means for a cameraman to see the entire material turning up defective!**"[47] [emphasis added]

ACCIDENTS ARE NEVER ACCIDENTAL: Threading both of these films through the narrative of "defect" exemplifies Paul Virilio's contention that there is no "accidental catastrophe" of a technical nature, which subsequently reveals an unattended error, programming glitch, or series of mishaps leading up to the 'improbable' event. Failure is preemptively encoded into any machinic assemblage as its virtual double—its evil twin—the accident invented simultaneously with the invention.[48] The possibility that Shevchenko's film stock might also become "defective" was already incriminated within the virtual archives of *Stalker*, prior to him having ever loaded his film canisters and flown into the Red Zone. The very existence of a cinematic assemblage (camera, film, developing solution) is a prehension that a technical malfunction of a greater or lesser degree may occur at some point, which might in turn attach itself to a localised event-transmission: *Stalker* and/or *Chronicle of Difficult Weeks*. The accident as a possible event is always-already preprogrammed into any technical object as one of its latent capacities even though chance still has an important role to play in creating the necessary conditions for its emergence. However when circumstances conspire 'accidents' can happen, but as both Deleuze and Virilio note they do not happen not 'accidentally'. Standard maintenance protocols are processes, not for preventing, but for minimising the magnitude of the error dimension built into the technical machine. Data backup systems and software recovery programmes are sold not because of the unlikelihood of a fatal incident occurring, but because the accident exists as a statistical ontological reality. The virtual is always real. The moment of technogenesis, whether located in processes of human individuation or in modes of technical organisation, is also the moment that we must confront possible failure and certain mortality. To endure is simultaneously to perish. Nuclear disasters don't happen by mistake, they are inadvertently manufactured as one of the many consequences of harnessing of

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[46] Gilles Deleuze, Difference and Repetition, [New ed.] ed. (London: Continuum, 2004). P. 148.
[47] Stas Tyrkin, "In Stalker Tarkovsky Foretold Chernobyl," Komsomolskaya Pravda March 23 2001. P.2.
[48] See Paul Virilio, "The Primal Accident," The Politics of Everyday Fear, ed. Brian Massumi (Minneapolis: University of Minnesota Press, 2000).. P.212.

nuclear power. This is why the powerful myth of a fail-safe system still requires a series of back-up operations and contingency plans just in case that 'unthinkable' future-event does arrive.

INVENTING THE ACCIDENT: Although inventions are tacitly understood as coming about through processes of experimentation or in some cases fortuitous serendipity, an invention may also come about through an act of recognition that brings some previously hidden or unobserved reality into public perception. This conceptual mode of inventing is in essence a form of paying-close-attention-to; a kind of perceptual framing device that organises diffuse or latent elements into recognisable patterns and brings them to our immediate attention. Inventions can lie in a state of prolonged dormancy, that is, indiscernible to the human ecologies for whom they are a matter of concern until conditions arise that provoke them into retroactive presence. As Virilio suggests, it is in the very act of uncovering or covering something that the invention is constituted and thus by extension also the accident. When English archaeologist Howard Carter discovered the only intact burial chamber in the Valley of the Kings in 1922 and unearthed Tutankhamun's tomb "he literally invented it" writes Virilio.[49] Or in the case of Chernobyl it was in the act of entombing the colossal nuclear power plant in concrete and steel to create a latter-day Sarcophagus that the "major" nuclear accident was invented.[50] Focusing awareness upon something for the first time is akin to inventing anew. While the nuclear accident as a possible outcome was already implicated within the first controlled nuclear fission chain reaction set off by Enrico Fermi in 1942 and subsequently imprinted into the technical assemblage of the nuclear power plant, its recognition as a catastrophic nuclear accident required an act of signification (the construction of the Sarcophagus) equal in magnitude to the cataclysmic scale of the tragedy. Gorbachev understood this implicitly when he issued his first press release reporting minor damage at the Chernobyl plant site. Acknowledging the immensity of the disaster would also be to reinvent it as such—as calamitous and huge. This in turn would require a reciprocal response of similarly dramatic proportions on the part of the Soviet state that would no doubt also trigger accusations of culpability in corresponding measure, something the Central Committee was reluctant to undertake or admit to.

▣→ **T203**

PECULIARLY PREEMPTIVE: The voodoo-like force that enmeshes Tarkovsky and Shevchenko's films through the cinematic space-time of the "accident" is activated by a series of coincidences that bind the aesthetic malfeasance of chemistry with the politics of the nuclear. To suggest that the accident is always prefigured in the technical organisation of the system does tend to conjure a world of determinism where the disquieting strangeness of coincidence is diminished and rendered a de facto by-product of the machinic assemblage.

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[49] Virilio, The Original Accident. P. 9.

[50] The deteriorating state of the Sarcophagus has been the subject of several architectural competitions to design a more permanent and secure burial structure, all of which have come to naught due to the lack of financial resources in the Ukraine for what would become the world's most ambitious work of engineering to-date.

Film is a particularly unique form of preemptive technology because its functional capacity for machining narratives is one of its defining elements. Although *Stalker* reactivates events that have already passed and anticipates the coming of future events, it does more than simply orient itself by pointing towards—it actually pre-narrates the plot and develops the visual lexicon that will map itself onto future representations of the nuclear accident. As Laura U. Marks has suggested film is a fossil-like medium (a recollection-object) that "condenses cryptic histories" within each of its frames. Because it is spatially organised in terms of an encounter between a spectator and the screen, it is able to "translate" these "encoded" experiences over time. It is this space in-between that bestows onto film the power to represent and charges it with meaning.[51] *Stalker* becomes, in effect, the encrypted virtual archive from which *Chronicle of Difficult Weeks* will derive many of its signifying resources. Machines for sonic and visual inscription are thus also technologies of the archive, machines for recording and retrieval, for travelling in time. While the archive narrowly conceived is likewise a preemptive technology, in that it organises its categories in advance of the selective entry of its artefacts and thus pre-narrates what stories can be told in the future, its archival documents can be resequenced to tell different versions of events. Analogue film's insistent linearity, the fixed sequence of its frames, would seem to disavow or at the very least severely limit such conceptual peregrinations. And yet even a tenaciously programmatic narrative can be creatively re-engineered to author other historical accounts and testify against its intended origins. How then to input peculiarity and uncertainty into the logics of preemption especially as it concerns the operations of cinema?

FUTURE FILM: Massumi suggests preemption acts not to inhibit a future event from taking place as per its conventional military formulation, but rather to bring the future into the present as a felt-effect. Tarkovsky's film *Stalker* a prescient means by which the future—Chernobyl—was brought into presence a full six years prior to its eventful explosion. Watching the film today provokes disquieting sensations, aware as we are, that what we are looking at is really images from the future; retrospective knowledge of things yet-to-come that makes it impossible to view *Stalker* without the specular image of Chernobyl already implanted in our mind's eye as that towards which the film is prophetically signalling. A presentiment of things to come that reminds us that the future-past is always-already here, virtual in its manifestations but actual in its effects.

"Preemption does not prevent, it effects. It induces the event, *in effect*. Rather than acting in the present to avoid an occurrence in the future, preemption brings the future into the present."[52]

"The event's consequences precede it, as if it had already occurred. It [the] event remains virtual—future-past—but is real and present in its effects."[53]

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[51] See discussion of fetishes and fossils in Laura U. Marks, The Skin of Film: Intercultural Cinema, Embodiment and the Senses (London: Duke University Press, 2000). P. 89. See also Glosary entry *Radioactive Fossil.*
[52] Brian Massumi, "The Future Birth of the Affective Fact," Conference Genealogies of Biopolitics (Montreal: Concordia University, Université du Québec à Montréal, Université de Montréal, 2005). P. 8.
[53] Massumi, "The Future Birth of the Affective Fact." P. 8.

Preemption conceptualised as such is a form of ventriloquism in which the incoming voice of the future takes possession of the present producing an analogic effect whereby the future speaks as if were the present. But unlike Baudrillard's thesis of simulation in which media systems over-encode the real to the extent that they end up supplanting it, preemption doesn't necessarily annul the present, instead it strives to "overlay" the future onto the present as a perceptual condition. For example, the perceived threat of nuclear annihilation during the heightened tensions of the Cold War functioned to generate collective anxiety amongst most Americans even though no such attack ever took place. Following the "archaeologic" of Virilio we might even be tempted to say that the averted Cuban Missile Crisis of 1962 invented the fear of nuclear reprisal. Likewise Shevchenko's damaged footage may be reconceptualised as literally inventing the nuclear accident at Chernobyl. Although the event—the Cuban Missile Crisis—remained entirely virtual, that is to say unrealised as an actual nuclear attack, it felt real in terms of the anxious and fearful responses that it triggered in the American body-public. If preemption is a kind of trigger-effect capable of activating the virtuality of futuric events in the present as a sensorial stimulus, than surely the future must likewise exert its conditions of unknowability and indeterminacy upon the present.

→ C301

The example that Massumi unpacks (which is also discussed in the *Glossary entry Preemption*) is the current system of spectral warning codes used in the Unites States to alert its citizens to imminent danger and potential threats. The receptor body of the American public is so attuned to living in a permanent state of code-red anxiety (perpetuated by media systems, government agencies, conspiratorial discourse, racist ideologies etc.) that they live and experience the fear of imminent danger as if it has already happened. The dread streaming from the future is internalised within the space of the here and now and thus experienced as an actuality. The logic of this transaction between the future and the present does seem to hinge upon a rather certain conception of what the future might hold as a likely event. But while the threat of another terrorist attack had been aggressively pre-narrated by the Bush Administration (and by Tony Blair in Britain), the ambiguity as to the shape it will take or advent of its appearance remain uncertain. To extend Massumi's argument, I would like to suggest that the very conditions of uncertainty and dynamism that govern our movement into the future (as per Darwin) are also the conditions that underwrite preemption as necessarily strange and peculiar. It is precisely the fact that something "may happen", the "chance" that something will happen that colludes with our psychic predispositions and grants to preemption the power to convince us of a portentous arrival. Without the element of chance and uncertainty, preemption would not be able to pull off the swindle perpetrated by the future on the present.

→ W101 / W102

Creative works produce as Deleuze calls them "sensory aggregates" in that they composite many heterogeneous elements in intertwining a spectator with a work of art.[54] Sometimes these artworks come precariously close to bringing an aspect of our lived reality or an aspect of our psychic life into direct contact with the storyline of a novel or the unfolding diegesis of a film conferring a sense of déjà vu or premonition. To suggest that these creative manifestations are simply modes of fiction making is to disavow their agency as preemptive technologies that are capable of discharging their affects into the space-time of the reader/viewer who encounters them within their specific present. "To speak of fiction concerning an innovative scientific proposition [or for my purposes a work of art] does not mean saying "its only fiction."[55] When the perceptual attributes of an artwork such as film resonate and entangle themselves with the social and psychic dimensions of lived experience they remind us that the retroactive or prospective actualisations of the virtual in the present are not exclusive to the domains of fact and the categories of history, but are also to be found within the expressive matter of art, within the persistent mythology of rumours, and within the preemptive dynamics of imagination.

Radiant Perversions

SURROUND SOUND: Because we as film spectators hover along with Shevchenko well above the reactor core, we assume that we are well out of harm's way, but when we hear the film's energetic soundtrack we suddenly realize, as did Shevchenko, that the film is itself still dangerously alive, that the tentacles of radiation have entered into the very pores of not only filmic matter but of matter in general. "Radiation is a fatal invisible foe. One that even penetrates steel plating. It has no odor, nor color. But is has a voice. Here it is."[56] Safe and 'sound' no more in his glass helicopter bubble. What did he feel like when he looked at his defective film stock and finally realised what had transpired? If radiation had remolecularised his film than surely he recognised that his own body too must have been riven by the same turbulent contaminants.

BUBBLES, GLOBES, FOAM: In a lecture on micro-spheres and bubbles at Tate Britain (December 10 2005), German philosopher Peter Sloterdijk drew from *Spheres I: Bubbles, Microsphereology* (1998) volume one of his ambitious work on Sphereology to extend a discussion of the sphere as a fundamental form in shaping metaphysical and materialist transactional economies or what he calls "interfacial spheres of intimacy."[57] Humans for Sloterdijk are sphere producing and sphere dependent beings and although some of their micro-bubbles burst instantly others endure to structure all of our intensive and intimate

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[54] See Gilles Deleuze, Negotiations (New York: Columbia University Press, 1990). P. 123.
[55] Stengers, Power and Invention: Situating Science. P. 137.
[56] Transcription of film voice-over from Chernobyl: Chronicle of Difficult Weeks, dir. Shevchenko.
[57] *Sphären I: Blassen, Mikrosphärologie* has yet to be translates into English. Luca Di Blasi, "A Review Of: Sparen I: Blasen," Electronic Book Review (1999), July 26 2005 <2http://www.electronicbookreview.com/thread/criticalecologies/philosophical>.P. 1.

relations.[58] The sphere in his trilogy is conceptualised as scalar, swelling in size and scope from infinitesimal micro-bubbles and globular mid-sized systems to the macro-architecture of foam. Sloterdijk's project is guided not by the meta-question of Western philosophy; the question "being"—what is man, but rather by the locational question of "place"—where is man? In particular, the enmeshed relationship between organisms and their sustaining environment constitutes the dyadic space of emergence for Sloterdijk, whether the placenta of the maternal human body or the oxygenated atmosphere that permits organic life to flourish. These systems are closed with respect to their internal organisation but subject to external and often violent boundary transgressions, which sunder their environmental co-dependency often resulting in death. From the auto-immunity of the viral-infected body to the radioactive dust clouds of the irradiated nuclear landscape, a compromised milieu is in critical danger of no longer being able to support the vital processes that nourish life. The motif of the sphere is therefore not so much a metaphor for an integrated ecology but functions "explicatively" as Sloterdijk would say to designate a structural interface for analysing the concrescent relationship between the concepts of product design (naturally inhering or synthetically produced entities) and the notions of an environment or milieu (whether the microscale of bacterial mold cultures or the macro-climate of chemical warfare).

AIR TREMORS: What is of particular relevance to my discussion of the radiological event is the ways in which the airborne sphere opens us up equally to spaces of wonder and horror, allowing us to follow these tiny globular units through intimate and "hidden worlds" from natural systems in biology to nuclear weapons manufacture at Los Alamos. The sphere travels covert and secreted spaces. In as much as it is a primary and nourishing element in our shared ecology, the sphere is also a precarious entity, prone to puncture and predisposed to molecular recombination with other spheres, such that fatal substances may be both imprisoned within or set free. The narrative arc of the paper Sloterdijk presented at Tate Britain was titled "Surrealism and Terror" and began with a description of a performance by Salvador Dali for the *London Surrealist Exhibition* of 1936 in which he appeared on stage enclosed/enclothed within a deep-sea diving suit. As the performance unfolded Dali slowly began to suffocate, hermetically sealed as he was in the biosphere of his own glass diving helmet, prompting a last minute intercession and rescue by audience members who viewed the performance as just one more stunt in Dali's portfolio of antics. Sloterdijk recalls Dali's near death by asphyxiation in order to forward a discussion of the sphere as an "architecture of containment" in which the dynamic forces of both life and death are suspended—held in a state of arrest—until their fated release.

→ S301 / S302

In a related 2009 article "Airquakes", a precursor to his forthcoming book *Terror from the Air*, Sloterdijk chronicles the modern manifestations of atmospheric warfare (atmoterrorism). In detailing the chlorine gas attacks of the German Western Front at Ypres during WWI, the development and use of Zyklon B by the Third Reich in the crematoriums of Auschwitz, the

[58] See Di Blasi, "A Review Of: Sparen I: Blasen." P. 1.

application of hydrocyanic acid in the first civil execution in a Nevada gas chamber in 1926, and the 1995 doomsday sarin gas attacks in the Tokyo subway, he narrates a "drama of atmospheric explication" which he regards as the genealogical antecedents to the 21st century paradigms of terrorism. He writes: "The 20th century will be remembered as the period whose decisive idea consisted in targeting not the body of the enemy, but his environment. This is the fundamental thought of terror in a more explicit and contemporary sense."[59] The molecular and migrating particle becomes the delivery system par excellence by which lethal toxins were carried into the terrifying narratives of modernity. "New terror weapons are those through which the conditions of life are made more explicit; new categories of attempts make evident—in the midst of a malignant surprise—new levels of vulnerability."[60] As the dust clouds tumbled down the streets of Lower Manhattan in 2001, they inaugurated a "war on terror" in which the expanded battlefield of the atmosphere replayed the spectral horror of earlier air tremors: the American detonation of two atomic bombs over Hiroshima and Nagasaki, the fiery napalm attacks in Vietnam in which a young girl is remembered fleeing in anguish, and the ferocious expulsion of radioactive fumes at Chernobyl.

"America is conducting war like it's a lethal injection, like curing a disease. It's deeply protestant, deeply metric. During the bombing of Iraq, the whole thing was conducted as if it was something taken from Kant's judgement of taste and aesthetics. The idea was that 9/11 couldn't be constructed in terms of taste and aesthetics: Stockhausen was vilified for claiming it as an aesthetic spectacle, and yet, a year later, the bombing of Iraq is described as 'shock and awe', which are aesthetic terms."[61]

LOVE GASOLINE: The space of the sphere for Sloterdijk is the architectural and transhistorical means by which synthetic compounds, biological agents, and even mystical contagions are housed and structurally transmitted across time and between incongruous entities to actualise new alchemical events. The lengthy translated excerpt that makes up the *Glossary entry Yearn* (see below) highlights a further evolution of Sloterdijk's "Sphereology" as the chemistry of spheres is returned to the radiant metaphysics of a pre-Cartesian world, a world governed not by the cold empiricism of science but by the enraptured processes of natural magic. This pre-modern strand of his sphere theory is usefully synthesised by Réné ten Bos and Ruud Kaulingfreks in their essay "Interfaces" (2002) and prepares the ground [or rather the air] for a discussion about the troubling elision of the nuclear with the aesthetic attributes of the atmospheric sublime.[62]

→ Y101

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[59] Peter Sloterdijk, "Airquakes," Environment and Planning D: Society and Space 27 (2009). P. 43.
[60] Sloterdijk, "Airquakes." P. 49.
[61] Jake Chapman and Simon Baker, "Jake Chapman on Georges Bataille: An Interview with Simon Baker," Papers of Surrealism 1 (2003). P. 9.
[62] Love Gasoline is a reference to Marcel Duchamp's "The Large Glass" (1915-1923), which runs on self-secreting love gasoline. "The Bride is basically a motor. . . . The motor with quite feeble cylinders is a superficial organ of the Bride; it is activated by the love gasoline, a secretion of the Bride's sexual glands and by the electric sparks of the stripping. (to show that the Bride does not refuse this stripping by the bachelors, even accepts it since she furnishes the love gasoline and goes so far as to help toward complete nudity by developing in a sparkling fashion her intense desire for the orgasm." See Michel Sanouillet, ed., Salt Seller: The Writings of Marcel Duchamp (New York: Oxford University Press, 1973). P. 42.

The metamorphic effects of radiant energy unleashed by processes of the medieval heart, in altering the body's composition, eerily anticipates the radiological regimes of the nuclear as a similarly intensive recoding of spherical bodies in which radioactive isotopes can transmute chromosomes and remix molecular materials. As decaying radioactive particles passed through the housing of Shevchenko's movie camera (as well as that of his own body), they altered its celluloid matter by intensively reworking the granular chemical composition of the film's emulsive surface, a process of spherical deterritorialisation that eventually released a virulent new film sequence. However the nuclear capacities of the 20th century were themselves preceded by the earlier discovery of X-ray technology, which also mutated matter by making visible the dreamlike inner chambers of the body. In fact the first X-ray image taken by German physicist Wilhelm Konrad Röntgen in 1895 was one in which the inscription of love was radiologically imprinted, when the metallurgical properties of his wife's wedding band deflected the penetrating rays of radiation.

→ X201

On the night of November 22 Röntgen, who had been experimenting with the fluorescence of cathode rays, exposed his wife's hand to a series of unusual rays as it rested immobile on a photographic plate, producing a radical new kind of representation. Unlike the limited airflow of electrons emitted by cathode rays, these Röntgen rays could pass through the atmosphere to generate shadowy photographic tracings from at a distance. A light that seemingly comes from elsewhere is a divine light that suggestively links the science of the X-ray with the transcendental metaphysics of spirit. "Like a dream, this form of light moved through objects, erased boundaries between solid objects, crossing their internal and external borders."[63] The resulting ghostly view of Anna Bertha's elongated skeletal digits conjured the coming of a "brave new world" in which the potential for dematerialising the corporeal substance of the body by technological means was first realised.

ATOMIC RAPTURE: Long referred to as "ghost pictures" because of the mysterious agency that could transform solid forms into ethereal image-matter, the X-ray gestures towards the recoding of Shevchenko's film by way of the phantom-like exertions of radiation. A harbinger of a new form of "a-visuality" conceptualised as an excess of vision that permits a seeing beyond vision or a seeing into the beyond. "On seeing her flesh transgressed, her interiority brought to the surface, Berthe is said to have shuddered at the "vague premonition of death" it evoked."[64] As with all radiant events, the spectacle of energetic transformation also reveals itself as a kind of ecstatic force and as such is not impervious to its aesthetic mobilisation within the category of the sublime. The rapture of lethal combustion is implicit in all representations of the nuclear event from the atomic testing in the Bikini Atoll to the spectacular mushroom clouds rising out of the cataclysms of Hiroshima and Nagasaki.

→ B101 / B102 / S401 / S402

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[63] Akira Mizuta Lippit, Atomic Light: Shadow Optics (Minneapolis: University of Minnesota Press, 2005). P. 44.
[64] Lippit, Atomic Light: Shadow Optics. P. 46.

This disturbing metaphysics of transcendence was indeed already operative within early scientific accounts of nuclear testing and experimentation, prompting Robert Oppenheimer to name the first unholy detonation of an atomic device in New Mexico *The Trinity Test* on July 14 1645. "I have become Death, the destroyer of worlds."[65] As another physicist working at the Oak Ridge National Laboratory's Neutron Physics Division put it: "Plutonium is neither waste nor fuel. It is an endowment" bestowed by nature onto humanity.[66] This conception of nuclear materials as directly descended from the realm of nature as opposed to being engineered within physics labs helps to explain why a confrontation with a radiological event is able to transmute horror so easily into the rapture of "shock and awe". The nuclear accident tends to occupy the same conceptual terrain as the natural disaster (theorised as unforeseen acts of god by actuarial science) because the omnipotence of the forces that it unleashes can only find their direct corollaries within the apocalyptic processes of nature or the apocryphal retribution of the divine. Why does the phantasmatic horizon of the nuclear as the unassimilable fear of total death [radiophobia] also simultaneously activate the strange euphoria of cosmic transcendence [radiomania]?

In his text *Atomic Light (Shadow Optics)* film theorist Akira Mizuta Lippit reflects upon a comment made by the late abstract-expressionist painter Willem de Kooning with respect to the "radical visuality" produced by the atomic bomb. "The advent of atomic light signalled, for de Kooning, the absolute transformation of visual representation" inaugurating a new kind of seeing freed by the nuclear foreclosure of figuration's traditional symbolic economy.[67] In the apocalyptic forces unleashed by the bomb de Kooning located a 'transcendent' sublime as everyone was momentarily reduced to colourless transparency and dispersed into the radioactive dust of angels. In 1951 de Kooning wrote the following: "Today, some people think that the light of the atom bomb will change the concept of painting once and for all. The eyes that actually saw the light melted out of sheer ecstasy. For one instant, everybody was the same color. It made angels out of everyone."[68] Lippit argues that de Kooning's "sadistic metaphysics" confuses the radical a-visuality of atomic light with a kind of religious fervour that maps a "redemptive" narrative onto the conversion of the physical body into ghostly spirit-matter by the sheer visceral and spectral force of atomic energy. For de Kooning nuclear annihilation transforms corporeality into ethereal substance, while those that "saw the light" with their own eyes sacrificed their vision for an eternal radiant optics housed within the soul; a perversion of the techno-scientific apparatus that recasts its atomic capacities as mystical and generative of angels.

SUNSHINE: Likewise in Danny Boyle's latest sci-fi film *Sunshine* (2007) radiation is once again advanced as an omnipotent god-like force, not because of its thermal properties but

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[65] Robert Oppenheimer quoting from Hindu scripture upon witnessing the first atomic explosion. David Crowley and Jane Pavitt, Cold War Modern: Design 1945-1970 (London: V&A, 2008). P. 103.
[66] A similar implosion-designed plutonium bomb, the "Fat Man", was dropped on Nagasaki three weeks later on August 9 1945. Quote by Wolf Häfele, guest scientist at the Oak Ridge National Laboratory's Neutron Physics Division 1959-60.
[67] Lippit, Atomic Light: Shadow Optics. Pp. 81-82.
[68] Willem de Kooing, "What Abstract Art Means to Me," Collected Writings, ed. George Scrivani (New York: Hanuman, 1951/1988). P. 60. Cited in Lippit, Atomic Light: Shadow Optics. P. 81

because of its sensuous metaphysical dimensions. Set fifty years into the future, the plot turns on the looming extinction of the human species due to the perishing electromagnetic radiance of our sun and advanced cooling of the earth. In response a spaceship is dispatched to boost the energy levels of the sun by launching nuclear warheads into its solar mass. The crew of the spaceship however, find their salvation not in succeeding in their mission to save the planet but in their fatal submission—heat-death—to the sun's still radiant vortex which converts them fleetingly into brilliant flickers of light or flame. Throughout the film we witness one of the ship's crew sequestered in a cosmic screening room where he sits transfixed by the streaming rays of the sun. As he stares in sedated solar stupefaction he beseeches the computer to increase the intensity of incoming rays by opening up more and more of the screening room's protective light shield. He is clearly drugged by the lethal chemistry of the sun, but it is a mystic intoxication represented by the all-powerful forces of the sun that fuels his mesmerized addiction.

▣→ S403 🕮→ F101

LIQUID FIRE: In their book *No Caption Needed*, the authors discuss the iconic photograph of Kim Phúc, taken by Nick Ut in 1972 (the subject of *Chapter Two: Tele-Transmissions*) during an accidental napalm bombing in South Vietnam, as a refutation of the logic of sublime transcendence. They write:

"The moral danger of this world is captured tonally in the picture's composition of light and darkness: as the dark smoke blots out the sky and while the girl bathed in light has in fact been seared with **liquid fire, the elements of the sublime are present but out of order, gone demonic. Light hurts**, darkness towers over all, awe is induced by destruction, terror is not sublimated to transcendent order. The photo depicts a "troglodyte world" where moral norms have either been inverted as children are being targeted or abandoned as soldiers walk through the scene not caring. The image calls a public to moral awareness, but its rhetorical power is traumatic."[69][emphasis added]

Unlike the preceding discussion of Boyle's film in which heat-death is both a metaphoric and metaphysical form of rapturous submission to a supreme force or power, the searing heat produced by the acid-bath of napalm gel as documented by Ut, cannot be viewed as anything other than the ontological source of suffering. "Light Hurts." The photograph has no critical purchase with the traditional operations of the sublime because it actively pushes the viewer away from the scene of the crime rather than luring us into a space of atmospheric freefall. "The elements of the sublime are present but out of order, gone demonic." As such the photograph resists conversion of its specific pictorial content into a universal sign of pain or horror that can induce a state of transcendence, though arguably its status as an icon participates in a certain discourse of universality. Documentary films and photojournalism are not impervious to aesthetic considerations and are clearly capable of invoking the conditions of the sublime. Take for example the wondrous underwater films of Surrealist Jean Painlevé or the hyper-saturation of Ed Burtynsky's photographic indictment of globalisation's "manufactured landscapes". However, the transformation of an actual event into the pure

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[69] Robert Hariman and John Louis Lucaites, No Caption Needed: Iconic Photographs, Public Culture, and Liberal Democracy (London: University of Chicago Press, 2007). Pp. 182-3. Their term "troglodyte world" is lifted from Paul Fussell, The Great War and Modern Memory (Oxford: Oxford University Press, 2000). Pp. 36-74.

signifying domain of an image-event can only be realised by the instantiation of a "culture of distance" that maintains boundary distinctions between a subject and the object of their perceived engagement, between a subject and their environment. Sphereology refuses the mediating structure of differential geographies that would situate a viewer entirely outside of the image-circuit in which they are themselves participating as observers. This is the lesson of Shevchenko's irradiated film. Although I sympathise with Lippit's revulsion to de Koonig's interpretation of the detonation of two atomic bombs over Japan as inventing a strange new light and thus a new form of vision, I understand why the aesthetic dimensions of this nuclear event was so persuasive for him. Without an insistent counter-image to the radiant spectacle of the a-bomb exploding in the distance, the event remains entirely atmospheric, suspended in space and time; it literally becomes a free-floating signifier unhinged from the terrors it provokes on the ground. Of course Japanese image-analogues to that of Kim Phúc would have been in public circulation and available to de Kooning, but these were not the pictures that he was interested in seeing.

▣→ **S404 / P101**

Although the two photographs document the same event, they align themselves at either ends of the axis between beauty and horror, transcendence and immanence. The first image (S404) depicts a soldier taking pictures of the aerial bombing of Tran Bang. As a long-shot it maintains it allegiance to the Kantian operations of the sublime as a confrontation with and capture of a spectacular atmospheric image-event that can be rationally perceived even though its perceptual effects are formless and sensate. Whereas the mid-range shot (P101) of Kim Phúc running out of the burning inferno directly towards the camera/viewer troubles what we are seeing (a representation of living-death), how we are understanding what we are seeing (the signifying codes embedded in the image) but also what its means to take/make a picture of such an event (its ethical imperatives). While the plenitude of suffering present in the photograph—its image excess—also prohibits our ability to synthesize and contain it within the constraints of our imagination, thus conforming once again to a generalised understanding of the mechanisms of the Kantian sublime loosely conceived, the demonic "greatness" of the event refuses "reason".

🕮→ **N301**

Atomic Architecture

RADIANT CITIES: With the intensification of the Cold War representations of the nuclear shifted from optimism to anxiety as the discourse focused increasingly upon personal protection and civil defence. In 1949 the US Airforce discovered high levels of atmospheric radiation in a fly-past over Russia. "Fear replaced the feelings of control" as the Americans realised that not only had the USSR detonated their first atomic bomb, but that they were no longer the sole nuclear power. Worries over the spread of communism quickly mapped themselves onto the terror of an imminent nuclear attack. Architecture responded in kind with

a proliferation of designs for the construction of bomb shelters and subterranean communities. By 1960 it was estimated that over a million American families had built fallout shelters on their property.[70] On December 18 1950 *Life Magazine* published Norbert Wiener's pictorial essay "How U.S Cities Can Prepare for Atomic War". His primary concern focused upon the disruption in the flow of communication and traffic systems that would ensue as a result of an atomic attack, something he argued would prove even more fatal than the direct effects of actual nuclear detonation. Wiener's previous investigations into cybernetic feedback loops or communication control systems were developed through his wartime research on anti-aircraft firing mechanisms and the problem of "goal-directed communications".[71]

→ W201

"For Wiener, the nuclear arms race was also the very figure of a science out of control, a runaway technological juggernaut riding a wave of mistrust and deceit."[72] Although he eventually renounced his work for the American military and became increasingly wary of technology's impact upon the project of "liberal humanism" Wiener held firm to his belief that the behaviours of organisms and information processing machines functioned according to similar morphological principles.[73] He equated the blockages in the lifelines moving in and out of the city after an atomic attack to the blockages that occur in the human body when biological systems undergo stress or damage and begin to fail. His plan proposed a series of radial beltways around the city that would provide many alternate delivery routes, which in turn would control the degree of entropy introduced into the system by traffic jams etc. Urban infrastructure needed to be able to respond to external conditions homeostatically by relaying information and modifying the pathways that it took in and out of the city in order to regulate its overall functions. Maintaining the equilibrium between the different sectors of the city was essential to surviving a nuclear attack.

From the aesthetics of progress exemplified by towering symbols of atomic potential, the nuclear went underground retreating into a bunker-mentality characterised increasingly by the aesthetics of dread. Open-air structures such as the *Atomium* in Brussels, 1958, the *Unisphere* in Flushing Meadows Queens, 1964-65 and *World Time Clock* in Berlin, 1969 lost their atmospheric lift and became dense, heavy, and contained as the atomic-inspired symbols of 1960s world fairs and expos gave way to the funerary encasements of post-nuclear accidents culminating with the construction of the Sarcophagus at Chernobyl.

→ A301 / A302 / B205 / B206 / T201 / T202 **→ B204**

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[70] Source: Office of Civil and Defense Mobilization (OCDM).
[71] Wiener conceived of a computational device, an anti-aircraft predictor, that obtained input data on the relative position and speed of an approaching aircraft in order to calculate its flight trajectory and predict the point of optimum interception as well as the human actions of its pilot. See Peter Galison, "The Ontology of the Enemy: Norbert Wiener and the Cybernetic Vision," Critical Inquiry 21.1 (1994). Pp. 228-266.
[72] Reinhold Martin, The Organizational Complex: Architecture, Media, and Corporate Space (London: MIT Press, 2003). P. 31.
[73] See "Liberal Subjectivity Imperilled: Norbert Wiener and Cybernetic Anxiety" in N. Katherine Hayles, How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics (Chicago: University of Chicago Press, 1999). Pp. 84-112.

EXTREMISM: Cross-cutting between the past and the future, Boyle's film brings to 'light' the current bipolar politics of atomic energy in which the nuclear is either the source of human annihilation or its potential salvation, a discourse which neatly maps onto the two geopolitical touchstones of our time, global warming and global terror. In the West broadly conceived, atomic energy is forwarded as the only economically feasible source of renewable clean energy, whilst externally it fuels fears that existing technologies for nuclear power will lead to weapons-grade uranium and plutonium production in Iran, the Middle-east (Israel not withstanding), India, Pakistan, and North Korea. The forces representing the 'responsible' use of nuclear power set against the forces of 'evil' intent upon manufacturing weapons of mass destruction. A scenario scripted entirely within the back-lots of Cold War politics, and re-released by Bush Studios and Co. as a neo-liberal capitalist remake in which only the "enemy combatant" has been culturally recast. "Why [asks Deleuze] does the pervert have the tendency to imagine himself as a radiant angel, an angel of helium and fire?"[74]

Nuclear Agents

THE SPY WHO CAME IN FROM THE COLD: In London, on November 24 2006, a former Russian spy died after falling strangely ill three weeks earlier. According to health authorities, Alexander Sasha Litvinenko, "intelligence agent-turned-dissident," succumbed to a lethal dose of a radioactive material (Polonium 210). The British Health Protection Agency (HPA) reported quantities of alpha radiation in his urine at five times the lethal limit. "Within a few short weeks, the fit forty-three-year-old lay gaunt, bald, and dying in a hospital, the victim of a tiny nuclear bomb."[75] The source of this extremely rare chemical in Litvinenko's body has been speculatively traced back to a meeting he had with two former KGB officers in various London establishments. Radioactive contaminants were subsequently linked to the Itsu restaurant in Piccadilly and the Millennium Hotel's Pine Bar prompting the following HPA advisory: "Anyone at Itsu or the Pine Bar on 1 November should call NHS Direct on 0845 4647. They will be asked a series of questions and may then be asked to take a urine test."[76] In a strangely prophetic and tragic twist of fate, his 2002 book was titled *Blowing up Russia: Terror from Within.*[77] Although the book detailed his accusations that the 1999 Moscow apartment bombings had been staged, its title can now also read retroactively as an ongoing indictment of the nuclear terrors of the Russian state, from the explosion in Reactor Unit 4 at Chernobyl to the horrific internal radioactive poisoning by which Litvinenko's own death was engineered.

→ L202 / P201

The idea of Polonium 210 moving unmonitored through the streets of London, having already travelled to the UK by a commercial airliner raised anew the Cold War spectre of invisible

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[74] Deleuze, The Logic of Sense. P. 319.
[75] Alex Goldfarb and Marina Litvinenko, Death of a Dissident: The Poisoning of Alexander Litvinenko and the Return of the Kgb (London: Simon & Schuster, 2007).
[76] BBC News broadcast, November 11 2006.
[77] Alexander Litvinenko, Blowing up Russia: Terror from Within (London: Gibson Square, 2007).

soviet agents infiltrating the security perimeter of the island with relative ease. In spite of the precautions taken by the Ministry of Defence (MOD) which has spent untold millions in bolstering Britain's counter-terrorism operations, the problematic of radioactive matter is one of "extraterritoriality" but not necessarily one of "statecraft", in that these dangerous materials cannot be contained in detention centres or repatriated to off-shore nations.[78]

Radiation is a double agent who works all sides of the political spectrum, and while it usually labours under the cover of state secrecy its defections often result in civilian casualties. As a chemical agent turned chromosomal [de]informant it observes no international sovereignty in its radical transgression of territorial and corporeal borders. And although the intricacies of political intrigue that ensnared Litvinenko within its radiological plot, recall many of the motifs of post-war espionage literature, from accusations of rampant corruption within government, intelligence and security service crackdowns on civilian populations, censorship, the imprisonment and assassination of outspoken critics and political opponents, to the defection of its own secret service personnel, the true nature of the diabolic events that transpired in November 2007 are ultimately far more Machiavellian than those of any manufactured Cold War thriller. In his 2007 film *Rebellion: The Litvinenko Case*, director Andrei Nekrasov investigates the events leading up to the Litvinenko killing through a series of flashbacks, interviews, and archival footage. "Amazingly, when Nekrasov interviewed Lugovoi before his indictment, the latter offered the filmmaker a cup of tea after explaining how it is possible to poison someone by lacing the beverage with polonium."[79] In retracing the narrative arc that led to Litvinenko's ghastly death we are catapulted unwittingly back into the dark malignancy of Chernobyl whose fumes also gave rise to the twisted-birthing of "neo-Soviet ascendancy", a primal accident whose radioactive tailings continue to find their political bearings within the vapour trails of the nuclear. [80]

Although the radiological event has continually been figured between the extremism of opposing poles: utopia/dystopia, shock/awe, beauty/horror, order/chaos, promise/dread, beneficence/malevolence, power/entropy, transcendence/immanence, deliverance/damnation, virtue/perversion to cite but a handful that have been touched upon in this chapter. The nuclear is an event that is better served by the concept of "becoming", as always subsiding in a state of potential: neither absolutely good nor evil, but in a perpetual state of becoming otherwise, that is becoming other than or 'radicalised' to the condition in which it currently is passing through. Its ontological nature is that of movement, dynamism, and change, not fixity, stasis, and permanence. Moreover, rather than being tracked along a chronological axis of time, the nuclear is also more productively serviced by the notion of the topological as a structural overlay that folds the future back onto the past, creating a spatio-temporal relay that operates in defiance of the inclinations of historicity towards the flat and the uninflected.

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[78] The term "extraterritorial statecraft" was used by Keller Easterling in a presentation she made in Research Architecture at Goldsmiths, University of London. See Keller Easterling, Enduring Innocence: Global Architecture and Its Political Masquerades (London: MIT, 2005). See also her forthcoming book Extrastatecraft.
[79] Thom Powers, Toronto International Film Festival (Toronto: TIFF, 2007).
[80] "Neo-Soviet ascendancy", a term used in Peter Bradshaw's film review. Peter Bradshaw, "Rebellion: The Litvinenko Case " The Guardian May 23 2008.

The mode of the nuclear event (and the task of this chapter) has been that of generating a problematic, one that might extract the nuclear from the discourse of extremism that forecloses its recursive capacities to both rethink and rework the past again, to actualise events anew and thus consider the ways in which matter and matters can begin to matter again. To think and work materials radiologically is, in essence, to fabulate connections, to tell stories, and invent new fables.

SOVIET DEFECTORS & DETECTORS: Arguably what is fascinating about Shevchenko's film is its transformation from a conventional documentary or benign media artefact into a radioactive fossil through the mysterious intercession of an invisible agent. Even when we are utterly aware of its horrific implications, we [as viewers] are transfixed by the strange markings and itinerant noise that suddenly emerge out of the depths of the image. The retroactive appearance of fallout on the film conjured by these radioactive ghosts still has the capacity to make us feel uneasy and anxious in their presence. If we are ultimately to re-read Shevchenko's film against the grain of representation, which is to say, to read it radiologically, it must be understood as an early warning system for monitoring the incoming signals from the future-past.[81] Marshall McLuhan viewed the creativity of the arts, not in terms of self-expression as is often the case, but as a kind of radar installation capable of intuiting the approaching transformations signalled by developments in new media and new technology. "The serious artist is the only person able to encounter technology with impunity, just because he is an expert aware of the changes in sense perception."[82] According to McLuhan, the perceptual dynamics of art in concert with the sense-perception capacities of the artist, who is specifically trained and attuned to the experiential and the sensate, allows art to register the incoming effects of the future without necessarily staking out a delimited terrain or identifying its operative modalities in advance of its arrival. Rather it enables us to discern its potential "targets" and the generalised parameters of its probable engagements.

"If art is an "early warning system," to use the phrase from World War II, when radar was new, art has the utmost relevance not only to media study but to the development of media controls. . . Art as a radar environment takes on the function of indispensable perceptual training rather than the role of a privileged diet for the elite."[83]

Shevchenko's irradiated footage operates as just such an "early warning system" with the notable exception that its filmic antennae are oriented not exclusively towards the eruptions coming from the future, but are also tuned into the tremors that still reverberate from the past. Radar, as its acronym implies, is a form of radio detection and ranging. As an ersatz radar system, Shevchenko's film transmits its radiological emissions out into the world, if some of these are perchance detected by Tarkovsky or Litvinenko for example, they are returned to us in the present where we experience them indirectly as "interference effects" or

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[81] Radiological film reading is a technical term and form of diagnostic cryptography that refers to the practice of optically decoding the incandescent semiotics registered by processes of X-ray technology; a mode of radiographic literacy that is used to examine welds in reactor rods and search for signs of malignancy in flesh.
[82] Marshall McLuhan, Understanding Media: The Extensions of Man (Toronto: Signet Press, 1964). P. 33.
[83] McLuhan, Understanding Media: The Extensions of Man. P. xi.

as pure events in the form of "actions and passions" (Deleuze).[84] A kind of shiver that skims almost imperceptibly over our skin each time we view Shevchenko's film. But unlike conventional radar systems, which try and eliminate interference and noise by focusing their transmissions upon specific "targets of interest", my project is predicated upon welcoming 'unwanted' signals into my research in order to activate entanglements between unlikely and non-aligned events. Its signal-to-noise ratio is thus skewed towards generating more interference rather than isolating and tracking particular historical signals. Consequently each time Shevchenko's film is screened its toxic temporalities are transmitted into the multiple space-times of history, and although some are reflected back to us, others perish in their atmospheric transit. As radiological emissions and nuclear emissaries they warn us of potential hazards and the risks that come with speculative research, reminding us that the breach of the Sarcophagus is always-already contracted to the filmic space-time of radioactive becoming through the seepages of the virtual. *Chronicle of Difficult Weeks* is ultimately a long-range media machine and tracking device for jamming history, modulating its frequencies and rerouting its signals to actualise new radiological events.

AN ACCIDENTAL POSTSCRIPT: When delivering an earlier abbreviated version of this text at the *Ubiquitous Media: Asian Transformations* conference in Japan on July 17 2007, the lecture-room at the University of Tokyo suddenly began to shake. Focusing intently upon my paper, I continued to read even though the other conference participants were becoming increasingly agitated. An earthquake of magnitude 6.8 was taking place near Niigata, which resulted in a series of malfunctions—leaks, burst pipes, and fires—at the Kashiwazaki nuclear power plant. Subsequent technical studies discovered that the nuclear plant had 'accidentally' been constructed directly on top of an active seismic fault. Experiencing the tremors of this radiological event directly as it was unfolding, signalled the uncanny entanglement between the conceptual matter of my research and the literal ontological ground upon which these ideas momentarily trembled, standing as I was amidst the quake. It was as if the actions of the future, my research yet-to-come, had colluded with the past, Chernobyl, to make the present shaky and thus a source of renewable creative energy for the future. As William Gibson has frequently remarked, "The future is already here. It's just not very evenly distributed."[85]

→ K101

[84] The signal-to-noise ratio is used in signal processing to reduce "interference effects" in radar systems by allocating their range of attention to specific targets of interest.
[85] William Gibson, The Science in Science Fiction, rec November 30, NPR, USA, 1999.

A Matter of Concern—Again

ENDINGS: In the 2003 "Stanford Presidential Lecture" given at the Humanities Center, Bruno Latour made a series of comments that have both troubled and reaffirmed my resolve to work the various media artefacts of my thesis. Having just wrapped up my final case study on the radiological event (see *Chapter Three*), I stumbled upon the following quote. "After all, masses of atomic missiles are transformed into a huge pile of junk once the question becomes how to defend against militants armed with box cutters or dirty bombs."[1] Indeed why focus my critical attention on the complexities of the radioactive, its political, material, aesthetic, and conceptual nature when such a concern has clearly been supplanted by other more urgent matters? Whether the ecological disaster of global warming that once again threatens planetary annihilation or the makeshift technologies of the everyday invoked by Latour that can bring nation-states to critical thresholds without the menace of a nuclear first strike. Yes, North Korea recently launched another Taepodong 2 long-range missile (April 5 2009) and expelled UN inspectors after threatening to quit international nuclear-disarmament talks and restart a plant that makes bomb-grade plutonium (April 14 2009). And although many weapons-grade nuclear programs are still up and running and the safety of nuclear power plants remains a subject of permanent debate, the nuclear horizon seems largely to have diminished as a focal point of globalised fear and terror. Even the bizarre radioactive poisoning of Russian dissent Alexander Litvinenko by Polonium 210 in 2006 seems decidedly anachronistic and reads more like Cold War fiction than a contemporary political assassination. While Latour's brief and perhaps somewhat cavalier comment gave me pause in consigning the atomic to the category of history, this thesis has insisted that its media artefacts cannot relinquish their struggles with the past without detouring through the complex entanglements of the present which must at all times remain open to the provocations of the future-yet-to-come. Throughout the process of working my research materials I have continually tried to confront the question of relevance, specifically why these now historical bits of minor machinic detritus should still matter and what their significance might be for thinking media operations and their related socio-political contexts today.

BEGINNINGS: The initial injunction that triggered this research project four years again was also a brief comment, made at that time by Isabelle Stengers, who admonished scientists that came to their subjects with their hypothesis well in-hand and merely sought to test its validity and thus confirm or deny their initial premise. "I'm beginning to suspect that a large part of the research has been done with the ulterior motive of imposing an answer on it. . . If only we were content to let the material speak!"[2] Researchers she argued must accept "the possibility that it is not man but the material that 'asks' the questions, that has a story to tell, which one has to learn to unravel."[3]

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[1] Latour, "Why Has Critique Run out of Steam: From Matters of Fact to Matters of Concern." P. 230.
[2] Isabelle Stengers, Power and Invention: Situating Science, trans. Paul Bains, Theory out of Bounds, eds. Sandra Buckley, Michael Hardt and Brian Massumi (Minneapolis: University of Minnesota Press, 1997). P. 126.
[3] Stengers, Power and Invention: Situating Science. P. 126.

This is *the* explicit argument that Stengers advanced in her discussion of Nobel laureate Barbara McClintock, a scientist who devoted her life's research to studying the cytogenetic structure of corn. As Stengers stated "to say corn is already to say too much" for McClintock each "aberrant grain had to be understood in itself: not as a representative "of" corn but more precisely in terms of the way it differed."[4] In recalling this moment I also wish to pay tribute to the spirit of intensive inquiry that guided McClintock's meticulous research of corn and influenced my own much more modest project. Taking my cues from McClintock [and Stengers], whose patient forty-year study allowed her to narrate the broader development of corn out of the singular accounts to which each tiny grain testified, the kernels of my own research have proceeded from a similarly ontologically oriented mode of engagement, which has insisted that media objects and events be unwaveringly studied in their granular particularity and molecular specificity.

"A materialist motto: we never get a relevant answer if our practices have not enabled us to produce a relevant question."[5]

Listening to my research materials and learning how to ask the right questions has involved a risk: the wager that they may not corroborate my own intuition as to their potential value and renewed relevance for thinking today. Some may have wondered whether it was only the peculiarities of my idiosyncratic interests that imbued these media artefacts with a sense of wonder; that conferred on them the power to provoke questions and generate the research pathways that I have followed. Contrary to this perception, it was the materials themselves that enchanted and perturbed me, that rendered wobbly the epistemological ground that first initiated the project. Only by admitting to the necessary dissolution of the pre-narrated models of rationality that accompanied me into the first stages of my doctoral research was I eventually able to create inventive new openings that in effect "let the material come to me". In fact I have proposed a somewhat more forceful reading of Stengers in which the material not only has its own agency—the power to make history—but more importantly "speaks back". And so now as I work my way back through the entangled tailings of this particular project, a remarkably simple question remains: how does something become a matter of concern again?

MACHINING CONCERN: Last night as I continued to read the published version of Latour's lecture I began to understand the broader context that he was mapping out in thinking through the relationship between matters of fact and matters of concern. And by extension how an object, an ontologically flat and factual entity, might be transformed into a thing, which he understands performatively as a "gathering" of inflected concerns. By way of example, he relates two parallel incidents that occurred in February 2003, both of which he observed with increasing dread on C-Span television. The first was the re-entry and explosion of the Columbia Space Shuttle, whereby a technical object was instantly converted into a cascading constellation of things as the spacecraft disintegrated, showering the fragments of its wreckage over the state of the Texas.

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[4] "Is There a Women's Science?" Stengers, Power and Invention: Situating Science. P. 127.
[5] Isabelle Stengers, "Diderot's Egg: Divorcing Materialism from Eliminativism," Radical Philosophy.144 (2007). P. 11.

In *Anti-Oedipus* Deleuze and Guattari make a series of related comments with regards to desiring-machines or what I am tempted to call concerning-machines which are in essence distributed processes for machining concern [desire]. These kinds of machinic processes only become operative, that is to say, they only become productive of concern when they no longer perform as expected or break down. "The artist is the master of objects; he puts before us shattered, burned, broken-down objects, converting them to the regime of desiring machines, breaking down is part of the very functioning of desiring-machines; the artist presents paranoiac machines, miraculating machines and celibate machines as so many technical machines, so as to cause desiring-machines to undermine technical machines."[6] And although these desiring-machines are said to only "work properly" when they break down we must be careful not to mistake Deleuze and Guattari's notion of productivity with a necessarily positive force, as it is conventionally understood. Production can also be indicative of perversions, in which a mastered technical object is wilfully perverted into a multifaceted polymorphous thing.

The explosion of the Space Shuttle Columbia is unequivocally viewed as a tragedy and thus its system failure as revealing the moment that it finally "worked properly" must not be misconstrued as a perverse narration of the events that transpired. On the contrary the shuttle's technical malfunction sparked its metamorphosis into an event that would now matter differently for many different entities without subsuming the concerns of one to that of another, even when those individuated concerns are collectively mired in misfortune. Matters of fact reduce and narrow their terms of articulation and are preoccupied with finding common ground and commonly shared goals, whereas matters of concern enlarge and thicken their expressive vocabularies by stressing connections across divergent territories whose contradictory interests will remain external and other to the end. Deleuze and Guattari's philosophy is one of affirmation, in so far as that which is being affirmed is the "production" of capacities for inducing change. In witnessing the transformation of a technical machine into a multifaceted desiring-machine we reaffirm the amenability of matters of fact to becoming matters of concern again under the provocations of certain critical conditions.

This movement between fact and concern can also be loosely mapped onto the Heideggerian theory of equipment in which the taken-for-granted state of a technical object relegates it to being "ready-to-hand", whereas its conversion into something that is "present-at-hand", that brings it to our attention, might be figured as a matter of concern. As long as the computer at which I am currently typing away works as intended [submits to its assignment as an inscription device] it recedes from my concern and withdraws into the domain of technical efficacy as a hidden support for my writing. But when my hard-drive crashes, its "toolness" is no longer a mere reference for the ends it had previously worked towards, instead it comes into visible perception as it unleashes its particular forces in the encounter between my frustration and the situation of its no longer working as desired for me.

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[6] Gilles Deleuze and Félix Guattari, Anti-Oedipus: Capitalism and Schizophrenia, trans. Robert Hurley, Mark Seem and Helen R. Lane (London: Continuum, 1984). P. 32.

"The structure of the Being of what is ready-to-hand as equipment is determined by references or assignments. In a peculiar and obvious manner, the 'Things' which are closet to us are 'in themselves'; and they are encountered as 'in themselves' in the concern which makes use of them without noticing them explicitly—the concern which can come up against something unusable. When equipment cannot be used, this implies that the constitutive assignment of the "in-order-to" to a "towards-this" has been disturbed. The assignments themselves are not observed; they are rather 'there' when we concernfully submit ourselves to them. But when an assignment has been disturbed-when something is unusable for some purpose—then the assignment becomes explicit."[7]

The context is always decisive because that which is a matter of fact for me—the efficient operations of my computer—may already be a matter of concern for something or someone else—the fluctuations in the precious metals market for the gold used in its electronic circuitry, the extreme working conditions of South Africans labouring in the worlds deepest gold mines or the environmental impact of such mineral extraction on ecological systems. "The crucial point is that at any given moment, every tool is plugged into certain limited systems of machinery while excluded from others: For Heidegger, equipment *is* its context."[8] Moreover, these contexts are always multiple and overlapping, in that each entity for which something matters may confront its own specific and "different reality" at the same time as that of another. The destruction of the Columbia Space Shuttle mattered differently for the astronauts on board who perished, the uncertainties it augured for the future of NASA's space program, and even the flight trajectories of the birds that encountered its falling atmospheric debris. Literally out of the blue we became concerned again, as the univocality of the event—its status as just another technical machine moving through space—was dispersed into the cosmic-dust of human disaster and scientific trauma.

"What else would you call this sudden transformation of a completely mastered, perfectly understood, quite forgotten by the media, taken-for-granted, matter-of-factual projectile into a sudden shower of debris falling on the United States, which thousands of people tried to salvage in the mud and rain and collect in a huge hall to serve as so many clues in a judicial scientific investigation? Here, suddenly, in a stroke, an object had become a thing, a matter of fact was considered as a matter of great concern."[9]

The second incident referenced by Latour was the televised debates in the United Nations in which the second Bush administration argued vociferously for a military strike against Iraq. This time, a matter of concern or gathering of differentiated opinions, entities, and interests was channelled into a ballistic object, a lethal US warhead with a single target—the invasion of Iraq. Just as quickly as concerns can come about, they can also vanish into the subterfuge of empiricism: its prevailing logics, 'incontrovertible' facts, and rhetorical convictions.

"The difference between C-Span 1 and C-Span 2, as I watched them with bewilderment, was that while in the case of Columbia we had a perfectly mastered object that suddenly was transformed into a shower of burning debris that was used as so much evidence in an investigation, there, at the United Nations, we had an investigation that tried to coalesce, in one unifying, unanimous, solid, mastered object, masses of people, opinions, and might. In one case the object was metamorphosed into a thing; in the second, the thing was attempting to turn into an object. We could witness, in one case, the head, in another, the tail of the

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[7] Martin Heidegger, Being and Time, trans. John Macquarrrie and Edward Robinson (Oxford: Blackwell, 1962). P. 105.
[8] Graham Harman, Tool-Being: Heidegger and the Metaphysics of Objects (Chicago: Open Court, 2002). P. 23.
[9] Latour, "Why Has Critique Run out of Steam: From Matters of Fact to Matters of Concern." Pp. 234-35.

trajectory through which matters of fact emerge out of matters of concern. In both cases we were offered a unique window into the number of things that have to participate in the gathering of an object."[10]

When I first screened Shevchenko's film, it was also its "sudden metamorphosis" from an ordinary media artefact, a documentary broadcast, into a "radioactive fossil" that arrested my attention and transfixed my interest. As the realisation registered, that what I was seeing on film was no longer an image of the accident at Chernobyl, but the actual radiological meta-matter of the disaster inscribed directly into its emulsive substrate, the facticity of the cinematic assemblage as organised technical matter was transformed into a matter of grave concern: the comprehension that I was looking at the most dangerous spool of footage in the world.

Likewise when I discovered that the iconic photograph of Kim Phúc, which had catapulted directly into our collective conscious in June of 1972, was actually transmitted as an audio file by standard telephone relay. The mute acoustics of the image with its pictured cries of anguish should already have alerted me to this dimension of its ontogenesis. Over the years the affective dimensions of the photograph, which had initially ignited our moral outrage and occasioned our deep concern, dissipated as the continuous transit of the image within media circuits slowly wrung out its emotive capacities, transforming it into a lifeless technical object—an historical artefact. Female icons in cinema have to be able to hold a pose, to perform themselves as a kind of living-death that allows the viewer's gaze to linger on them in a protracted state of idolatry. Laura Mulvey characterises this pause in the flow of movement as a "delayed cinema" that overlays the star's vital screen presence with the controlled stillness of a filmic death-mask.[11] To become an icon is to transform oneself into a dead object for others, into a pure matter of fact. As the photograph of Kim Phúc was increasingly identified as *the* emblematic image for the travesties of war, it suffered a loss of aura that seems necessary for the activation of concern. To reconceptualise this image as sonic event and not simply to picture it as a representation, is to radically reinvent it and thus return it to the field of potential concern once again. Concern cuts the umbilicus that has tethered the image to the lifeless signifying domain of the iconic. Concern is that which breathes "new life" into the image. Concern displaces fact when the icon is toppled by another set of interests, another version of events that calls into question the facts that have previously been laid before us.

However the conversion of matters of fact into matters of concern is not a de facto progressive form of exchange, in that it is not predicated on converting the bad into good or upon revising the past. But it does involve an ethical reformulation because such transformations always come about through processes of struggle over the change in meanings of a given representation from a single fact/act into a plurality of concerns/practices. While we can act

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[10] Latour, "Why Has Critique Run out of Steam: From Matters of Fact to Matters of Concern." P. 235.
[11] Citing the untimely deaths of Marilyn Monroe, James Dean, and Grace Kelly, Mulvey argues that the star's "extra-diegetic iconicity" was further amplified because their deaths had already been cinematically prefigured in the immobility demanded by holding a pose. See Laura Mulvey, Death 24x a Second: Stillness and the Moving Image (London: Reaktion Books, 2006). Pp. 172-173.

out concern and may struggle against the conditions produced by accepted facts, our practices should always perform themselves firstly as propositional fictions [as per Stengers and McClintock] out of a concern for getting the facts 'right'. Yet calling something "fiction" does not mean to say that it is "only fiction".[12] In a 2008 public lecture at The Birkbeck Institute for the Humanities, visiting scholar Drucilla Cornell spoke of the urgent political necessity to picture new worlds that can function both as representations of an ethical ideal as well as acts of critical reflection.[13] "We need aesthetic ideas, inspirational ideas," she implored. While ethics is a branch of knowledge that deals with general principles of practice—a set of actions in relation to the world—the ethical contextualizes these principles in human systems of morality figured as an image of the "good".[14] Cornell's insistence upon the aesthetic dimensions of the political as the modality for evolving new and inspirational ideas is, however, not exempt from its ethical obligations, in that political representations cannot be redrafted without considerations for their context; the theatre of operations in which they will now be mobilised. The space in which images and ideas are produced and managed is always charged with power. Thus the transition, from a delimited and stable space of historical facticity into the expansive and uncertain terrain of renewed concern, is not is not a neutral process whereby meanings can be remade with impunity.

In *Chapter Three* of the thesis, I discussed Paul Virilio's contention that creating heightened or renewed awareness around a taken-for-granted object was akin to inventing it for the first time and thus expanding its explicative field of encounter. For Virilio the invention and the accident are co-articulations of the same process of technical organisation. When a technical object such as car or a computer breaks down and fails to perform as required, we suddenly become aware of its ontological threshold conditions as a complex universe of interrelating parts and components each of which must come together in very particular ways for the car or computer to work, to disappear once again into a state of non-concern. "Machines speak to machines before speaking to man, and the ontological domains that they reveal and secrete are, at each occurrence, singular and precarious."[15] Concern only becomes evident at a "machinic crossroads" when the "play of intensities within an ontological constellation" of differently constituted interests and events emerges.[16]

During the fall of 2005 I purchased my very own UHER 5000 tape recorder from an eBay vendor in Germany. It is an exact model of the machine used by President Richard Nixon's loyal secretary Rose Mary Woods for transcribing the White House Tapes. The same machine that she claimed colluded with her in creating the 18-1/2 minute erasure in Watergate Tape 342. As a technical object it is quite beguiling. Encased in a modernist-designed plastic housing, it sports a robust set of pushdown buttons for working the machine's various

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[12] See Stengers, Power and Invention: Situating Science. P. 137.
[13] Drucilla Cornell, Decolonizing Critical Theory: The Challenge of Black Existentialism (London: Birkbeck, University of London, 2008).
[14] Alexander Galloway, "Untitled," Conference Media Matters: Friedrich Kittler and Technoculture (London, UK: Tate Modern, 2008).
[15] Félix Guattari, "Machinic Heterogenesis," Rethinking Technologies, ed. Verena Andermatt Conley, Miami Theory Collective (Minneapolis: University of Minnesota Press, 1993). P. 22.
[16] Guattari, "Machinic Heterogenesis." Pp. 22 & 26.

functions. As I proceeded to examine the machine and test its working order, I curiously noticed that one of its buttons was missing. Where was the "erase" button that everyone had been referencing during the Watergate Senate investigation? Further research into the technical procedures for "erasing" analogue magnetic tape confirmed my suspicions that one could only ever re-record over an existing track, that inscription was Nixon's act of undoing and not the subtraction or deletion of information.[17] If Nixon was guilty (which is not my particular concern) it was for adding more information to the tape by overlaying another track onto its previously recorded substrate, even if that new track was the sound of relative silence, but it was not for withdrawing or removing potentially incriminating evidence. Yet missing or erased sound provided the baseline for the prosecution's argument as to Nixon's culpability and all subsequent perceptions of the 18-1/2 minute tape-gap. The simple empirical investigation of a machine had yielded a paradoxical discovery, the absence of a mechanism for erasure. The materials had spoken. And my first case study was invented—a cause for real concern.

But to return to a point of origin is not my goal. On the contrary this entire enterprise has been predicated upon performing a series of entanglements that intertwine themselves through time and space without due consideration for the conventions of historicity and its implicit obligations to author matters of fact. The past was recalibrated towards the future to ask not what these media artefacts did previously, but rather to query how they are still doing something now. An archive of the future was thus my starting point, and the analogue machines of my case studies, my conceptual vehicles for time-travel. If I began with Tape 342, it was not to exhume a historical relic that required my strategic intercession to extort its encrypted testimonial and amend the fossil records of history. As Stengers makes clear, the issue is not that this tape holds the key to unravelling the secret of Watergate and Nixon's likely perjury. The challenge posed by my materials generally and Tape 342 specifically is that they highlight "what is required from matter" in order for us to understand that the tape's conversion from an inert and silent technical object into a poly-vocal and dynamic entity was not a miracle of techno-resurrection but rather the consequence of being forced to think and question the limits of my own knowledge.[18] Moreover, the "tentative answers" to the challenge provoked by my materials rely upon, Stengers would contend, *the kinds of practices for which such a conversion actually matters*.[19] In all likelihood, a scholar of American political history would find the challenge of the missing erase button a quaint conceptual provocation at best, but not evidence to support a reconsideration of what transpired on June 20 1972. Whereas, for me personally, such practices are still to be found within certain domains of art-making, as well as within particular practices of cultural studies and research architecture here at Goldsmiths; fields of creative expression and critical inquiry that do not look entirely to the consolidating resources of traditional disciplinary enclaves, but have had to find their resources elsewhere, sometimes in the most unexpected of places.

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[17] Only a bulk-eraser can wipe a magnetic tape clean. This involves the immersion and withdrawal of a reel of tape from the field of a large AC magnet operated at the frequency level of a high-voltage power line.
[18] I have drawn very heavily from Stengers, "Diderot's Egg: Divorcing Materialism from Eliminativism." P. 11.
[19] Stengers, "Diderot's Egg: Divorcing Materialism from Eliminativism." P. 11.

VOODOO SPACE: This phrase was the earlier working title of my dissertation; a concept which I choose in order to underscore the double-movement at play within the project as both an overture to quantum entanglement with its insistence upon the ontological inseparability of matter as well as an invocation to take seriously alternative spheres of knowledge production.[20] While both science and the paranormal are equally capable of generating knowledges, the kinds of practices associated with each are not legitimated equally. Entanglement as derived from quantum physics provided the project with its conceptual method, allowing me to create ontologically consistent connections between unrelated events that were dispersed in geographic space and distributed over historical time. But it is entanglement's "spooky" nature, the ability to communicate telepathically and affectuate matter over the vast distances of the universe that propelled it into the domain of speculative proposition making. Entanglement thus conceived is not a metaphoric operation, but a mode of practice for working the materiality of the media artefacts and machines under consideration and a means for listening to the concerns they raise in the telling of their particular stories. Because something happened in the past is no guarantor of its continued relevance, but the fact of its having happened, the rumour that something occurred, does permit its conceptual entanglement with other events that in turn enables matters of fact to become retroactively repotentialised and prospectively activated as matters of concern. Likewise the fact that something happened in the past may be extremely relevant, both for understanding matters today as well as those of the past and the future yet-to-come, but its relevance may not necessarily have registered or have been publicly acknowledged. Relevance in this latter regard is a virtuality, an expression of the always-already-there as contracted to the event, in spite of its having been covered over by matters of fact that now requires an interlocutory gesture of reactivation to bring its concerns into actualised presence as relevant.[21] However, if matters of fact can only be transformed into matters of concern at a threshold condition of "changed" ontological intensity, then by extension entanglement's own relevance lies in its novelty for opening up multiple access points into the future-past; points of critical contact that radically recharge the objects encountered there, détourning technical matter in things that matter. It is this dynamic change in circumstance produced through the machinic operations of entanglement that allows it to do its work that, in effect, allows things to become a matter of concern again.

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[20] Because of the overall emphasis upon temporality throughout the thesis I felt that a spatially oriented title might be somewhat misleading even though the term "voodoo space" refers quite specifically to my conceptual method as invoking entangled matter's transit through both time and space.

[21] In a recent conversation with media theorist Ariella Azoulay we spoke about her curatorial project with "Zochrot" an Israeli NGO that has worked to generate greater awareness of the "Nakba" or Palestinian catastrophe of 1948. For the exhibition Azoulay culled images from various official archives detailing the formation of the State of Israel that she then reorganised into new taxonomic categories to provide a series of counter-testimonials that reveal the acts of extreme violence perpetrated against the Palestinian people. The "relevance" of these images as a witness to violence was always-already there, that is to say, was already pictured in the photographs both explicitly and implicitly, but their relevance for authoring a counter-narrative was not necessarily recognised as such until now. Thus the curating of these images into new assemblages of expression, in effect, allows us to see through them, to read their relevance as a matter of ongoing concern rather than as matters of fact celebrating the formation of a Zionist state. As Azoulay states the difference between "what was seen" was configured as an optical form of colonial aphasia "between those who see the disaster that befell the Palestinians as a catastrophe (from every conceivable human perspective), and those who see no catastrophe or, at best, see "catastrophe from their point of view." See also the exhibition Ariella Azoulay, Constituting Violence, 1947-1950, Zochrot, Tel Aviv, 2009. P. 7.

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