**Networked Re-enactments: A Thick Description amid Authorships, Audiences and Agencies in the Nineties**

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**Preface: a context for writing technologies**

Something happened toward the end of the nineties. Before then, starting in the early- to mid-eighties and on, the time when I first began to use the term writing technologies, every time I used it – in talks, my dissertation, commentary at conferences, articles, class syllabi, research colloquia, now ancient websites, fellowship applications and projects, book prospectuses, talking to my mom, whatever – I was pressed to explain it. It was never a phrase that explained itself. I have written mini-essay length footnotes and sections of chapters, given formal talks (and talked myself blue in the face!) in my attempts to describe, contribute to and create where it has, does and might take us among knowledge worlds, what kinds of power/knowledge relationships it opens out upon. I felt responsible for it.2

But something happened. Over the nineties, somewhere toward its end and into the next decade, the term, or some variant, began to explain itself. It began to be taken for granted and even to belong to particular communities of practice. Instead of something ‘happening’, it had already happened. In ordinary language it appeared casually. Its referents were sometimes historical – past writing technologies – and sometimes current. From that decade to the next scholarly books began to pick around its variants and even museum exhibitions took up ‘Technologies of Writing’.3 Today's writing technologies no longer needed some slight of mind to come into relief – there they were, intrusively obvious, and often claimed. The Web – once a quirky oddity for techies I could point to and play around with, a material example of a then counter-intuitive convergence and recombination, one across forms of inscription and meaning making devices – that Web was there, beyond accessibility’, in that fictional everywhere of "everyone's" lives. Even my cognitively challenged eighty six year old mom uses the term, unself-consciously talking to her nursing home crowd while she manipulates her iPod. I am unclear what my responsibilities are now.

**Another context for literalisation**

My one book manuscript, Speaking with Things: An Introduction to Writing Technologies, ever manifesting but yet to be manifested, called out for continual updates at the same time as it was caught up with its possible trade publisher in the vicissitudes of the price for scholarship and the search for markets in restructuring publication industries. Possible university presses for my other book manuscript, Networked Reenactments, flexible knowledges under globalization, suggested I take out of the book all the references to writing technologies. They wanted a cleaner line of argument, sometimes using cinematic metaphors to describe how the shape of the book ought to tighten up, its effects work for linear continuity, and its audience be targeted.

Being inside and moved around literally by the very material and conceptual structures you are analyzing and writing about is a kind of self-consciousness only partially available for explicit discussion. To describe such research situations by writing obliquely is a necessity, not an obstinate refusal to be specific or propose something in particular. And out of such awareness saying what counts as using writing technologies is also necessarily oblique – that is to say, diverging from the perpendicular, the normative. Thus this essay is performative, both a demonstration of cognitive sensation and a simulation of and for writing technologies; all expressed along the way of its examination of one set of these, of reenactments as examples of writing technologies in dynamic movement in the nineties.

Writing technologies always literalized for me tensions in grammatology, between both Ignace Gelb's and Jacques Derrida's uses of grammatology, that is to say, between writing's many possible referent/sign relationships in historical progression (Gelb) and that call to account of assumptions about writing's derivations from speech built into the assertion of these relationships (Derrida on logocentrism). I have wanted to play simultaneously with such histories of writing as that of Gelb,4 from whom Derrida takes the term grammatology, and with the sciences and technologies they are supplements to, origins and transformations of, as Derrida puts it. Paying attention to such deconstructive sciences and technologies means I take it seriously when Derrida tells us that deconstruction ‘risks’ grammatology, a ‘science of writing’ that may never be established or named, may never have a unity of project or object, may never be able to write its method or describe its limits because the history of now, our historical moment, is intertwined with and dependant on, but also dislocates, the relations between speech and writing that deconstruction calls to account as logocentrism.5

The very space of contrast between Gelb's and Derrida's writing – those tense literalizations that are writing technologies – shifts among contemporary historical moments as the range of denotation among words, speech, language, orality, literacy and techne also shifts amid the coming-into-being, re-discovery or re-thinking of new and old writing technologies. Many of these are shifts and dislocations over inscription6 as shaped among apparatus of authority and publication, of scholarly practice and commercial life. Working with Derrida, but literalizing tensions between these grammatologies, writing technologies are thickly described here as activities, skills and devices in layered assemblages, material and conceptual – some including inscription, but none limited to and by it.

And my responsibilities to Writing Technologies? What is it now, a something established and named, authoritatively vetted in scholarly apparatus? I am only too aware of being caught up in the history of now, how intertwined with, dependant upon writing technologies I am, but also how dislocating writing technologies, as I work among them, are. I cannot help but mime that understanding of Derridean différance not only as our hinge between speech and writing, but also as a performance of deferral....7

So, this essay offers its simulation, a necessarily oblique and deferring argument concerning writing technologies, as a discussion and display of reenactments. This is to make it somewhat easier, but not inappropriately easy, to demonstrate that, while some communities of practice might consider themselves ‘intensively’ (within their own communities of reference) to own or define the term reenactments (or own and define the term writing technologies), ’extensive’ displays such as my own thick description do a very different kind of important work, and can do so without throwing away this intensive work specific communities of practice do too. Some appropriate differences here are ones of scope and scale, and an attention to scope, scale, membership and grain of analysis allow one to participate actively, maybe even pleasurably, and move among knowledge worlds.

So this essay is a demonstration that writing technologies and reenactments and movement among knowledge worlds require understanding authorships, audiences and agencies in ways that keep redrawing forms of inclusion and exclusion, virtually moment to moment. Thus it is another literalizing attempt to work amid, describe, and engage with and as writing technologies, however spare or capaciously drawn, moving among various communities of practice and among audiences and authorships, the very point of the essay.

**Re-enactments: an introduction**

Some knowledge engineers claim that the 20 disciplines that came into being in 1900 had fractured into 8000 specialized topics in science alone ninety years later.8 Reenactments were among the experiments in communication across knowledge worlds – experiments in writing technologies – that began to take particular form in the nineties. Science-styled television documentary forms, internet repurposings, museum exhibitions, and academic historiographies worked hard to shape an array of cognitive sensations accessed, skilled and displayed – that is to say, ‘written’, in Derrida's counter-intuitively extensive meaning – by new technologies.9

These experiments became epistemological melodramas of identity, national interests, and global restructuring that tried to solve the tricky mapping problems of authoring knowledges as merely one of multiple agencies with limited control while addressing many diverging audiences simultaneously. It is this last point on authorship and audience that this essay will thickly describe as a contribution to studies in writing technologies.

What counts as reenactment here? ‘Extensive’ investigations pile example upon example, are intended to open up rather than close down uncertainty, to overflow with meaning rather than to manage it clearly. They investigate various definitions and their commitments, working perpendicularly to and analyzing the forms of normative authority and ownership that definitions entail. A ranging investigation starts with those reenactments we might most immediately think about – hobbyists reenacting battles of the War of the Roses for example, or interpreters at Colonial Williamsburg showing visitors how to make candles. But there are multiple units of analysis to work here in several ranges and more communities of practice to investigate; in other words, scales and scope matter here, and reenactments become a connecting thread among them.

It took me a while to realize that reenactments were a node in the globalizing networks of ‘flexible’ knowledges and media I was studying, a proper unit for the kind of analysis that in the nineties came to be called in academic, scientific and policy registers ’transdisciplinary’.10 I was clued in first by television, a writing technology the study of which I had been depending upon to reframe intuitions about what counts as writing, and among those that include but do not stop with inscription.11 Studying video folk media reworked creative uses of skills and devices in various kinds of inscription, assemblage and action as that Derridean ‘writing’. I hung out, a peripheral participant, in knowledge worlds of hobbyists of many overlapping sorts, folks moving among communities of practice and assembling work-around apparatus; in other words, people, especially women, colonizing and laboring in that then new terrain, the Web.12

At the same time I was also researching researchers and others with investments in originary moments in so-called ’print culture’. I had been all along meditating upon, critiquing and wondering about conceptual apparatus that operated to keep orality and literacy or the oral and the written, singular and separated. Such apparatus was an intellectual legacy of various schools of thought on communication, and was essential and foundational in a range of disciplines; in some communities of practice its critique is still literally unthinkable while in others it is fine grained and commonplace. Two formidable branches of this apparatus are a Toronto school ranging across the work of Harold Adam Innis and Mary Quayle Innis, Eric Alfred Havelock, Marshall McLuhan, Walter J. Ong and Brian Stock13 ; and a tradition of Harvard folklore lineages and conceptualizations, ranging from Francis Child and systematic manuscript ballad collection, to Milman Parry and Albert Lord and the oral-formulaic hypothesis, to the study of traditional oralities championed by others such as John Miles Foley.14 This apparatus, in its layered assemblages and partial uses and appearances across many disciplines not necessarily sharing foundations or literatures, was a legacy of modernism and of byways in academic specialization and research policies. Theorizations of ’print culture’ in various versions were built with and sometimes into this apparatus as well, with moments of reshaping in the course of the Cold War.15 I included my analysis of this assemblage in my use of that captious phrase writing technologies as I turned to a project researching researchers of women printers, publishers and Quakers during the English Civil War, eventually coming myself to study the ’virtual witnessing’ of the Royal Society together with the reenactments of Quaker protest before and after the Restoration.16

Feminist technoscience studies had become more and more my reference point for meta-analysis, for conceptual resources, literatures, and forms of investigation, although my departure points for analysis continued to be eccentric to science studies as an interdiscipline.17 Nevertheless science-styling in a range of knowledge worlds continually intruded upon my understanding of materialities shifting in the nineties among writing technologies and knowledge worlds.

Reenactments kept popping up, in very literal uses and highly conceptual ones, mandating alternatives along the lines of model and simulation to notions of metaphor and analogy, the latter notions that worked to keep referent and sign singular and apart. Such failures to enact dissection at the level of simple metaphors were the very political problem scholars identified with seventeenth-century Quaker reenactments and were perhaps an authorizing ‘virtue’ of the Royal Society's ‘virtual witnessing’; such reenactments necessarily but inadvertently enlisted, on the one hand a punishing state, on the other a reference community of authoritative practice, to continue and complete them.18 These were hierarchical, partial and highly interactive refusals to simply separate referent and sign. I began to glimpse how some reenactments, capaciously understood, might work today too, and why and how these matter.19

In other words, contextualizing the activities of those hobbyists and interpreters practicing ’living history’ required adding more layers, increasingly inclusive and perhaps less obvious, in the course of connecting additional activities, venues, objects, skills, people, powers and circumstances together with these and other reenactments. I say ’additional’ and ’together with’ in order to emphasize an extensive and overlapping range. Reenactments are nodes in a ranging infrastructure we are engaging today, one within which there are discontinuities but also connections. My thread through this essay is on these infrastructural connections, a networked and emergent reorganization of knowledge making and using that we interested in this journal are quite possibly a part of, probably even agents within. Using the term reenactments is to help us together perceive as many of these connections as possible and to begin to chart their significance as writing technologies.

**Knowledges as ‘science’**

This essay centers reenactments of a particular kind in science-styled documentary television – think Discovery Channel and PBS. Consider these as a practical point of departure. Imagine the term reenactments referring to a Google satellite map's departure point, a concrete venue also coming to include a lot of conceptual territory around it. To see the whole territory we pan out and up for a satellite view, or we come in closer and closer to see the very particular street patterns, maybe even to detail the backyard of a specific house. We move the orientation point around with our mouse, cursor, finger or whatever, to shift scope and scale. Such scoping and scaling action is one activity of reenactment this essay practices and comments upon as well. Such activity involves what we might call ‘cognitive sensation’, the study of which opens up alternative paths among trajectories of analysis for writing technologies.

What is saying that these science-styled documentary TV reenactments are both experiments in communication and also epistemological melodramas shorthand for? Well, let us turn to one of these documentaries, scaling closely to consider how such reenactments work, and then scaling and scoping out to make explicit a particular set of knowledge worlds and the work of reenactments to travel among them.

In 2003 a two-part documentary entitled Leonardo's Dream Machines was broadcast in the US on PBS. Written and directed by Paul Sapin, it was produced by ITN Factual, a TV production company in the UK that creates content for European and UK broadcasters and for such US television venues as PBS, National Geographic, Discovery and A&E.20

The show centers around two devices visualized from sets of drawings made by Leonardo da Vinci, each device chosen for building and explanation by specialists in overlapping but different knowledge areas. One drawing becomes pivotal and animated as a single element in a disparate set of famous Leonardo flying machine conceptions, this one a very tiny detail of pilot control that may be intended to elaborate previous Leonardo flying drawings. The other plan is for a war machine, a giant crossbow. In two collaborative teams, design and structural engineers, aircraft restorers, skilled carpenters, art and science historians and a world-record breaking pilot labor to make full-scale and part-scale working models from these drawings. They are aided by other art, science, military and church historians, a practicing and teaching artist, and skilled craftspeople in carpentry, metal work and restoration, as well as a bio-engineer, a cardiac surgeon, and a robotic engineer; all specialists themselves who offer expertise and imagination in interpretation of skills, devices, natural processes, people and infrastructures. While the two teams are not exactly in game show competition, still we and they are encouraged to explicitly compare their effort and each project's success. And the timeframes are conspicuously limited by the materialities of expense, and the availabilities of materials, specialists, venues, devices and film crew, in ways shaped by the filmmakers to create suspense, tension and dramatic conflict.

Each team is composed of two engineers of various sorts, an historian, either of art or science, and a person concerned with safety issues as part of the operation of the device; on the crossbow team, the lead carpenter, and on the glider team the pilot. In part one we see the present day specialists of the crossbow team fixing what they consider Leonardo's mistakes so as to ensure that their team's machine will work. We watch the glider team worrying how to ensure the safety of their pilot while adhering to Leonardo's own knowledges. When the crossbow team discovers at the end of part one that their alterations have failed to produce a properly working model, they realize just how far away they have gotten from Leonardo's design. What we could call the epistemological melodrama of this particular series gets clearer at this point. The contest, it turns out, is not between two present day teams but rather across time with Leonardo. That means that in the second part each model actually works only when team experts do it ’Leonardo's way’. Yet, if it is Leonardo who wins this contest, it is folks in our time who make it all happen; those who reinterpret the drawings against their own errors, with the knowledge of what they know must also be the case; together with those who film, shape, use and show to us many and more agencies involved; together with, finally, a range of additional reenactments offered to contextualize the multiple histories and present day forms of Leonardo expertise necessary to the series.

**Re-enactment in kinds and examples**

Many kinds of reenactment are part of the show in addition to this playful historical investigation of model-making from Leonardo's drawings, which in some situations might be referred to as ‘experimental archeology’. Some of the other kinds of reenactment include not only the costumed recreations of actors – Leonardo is played in the series in fictional flashbacks by Paul Arliss, for example – but also the hobbyist reenactors or historical interpreters. The Woodville Household Re-enactment Group is hired for this series in particular; like other reenactors they describe themselves practicing ’living history’ for their own entertainment and education, to people sites for historical preservation agencies and various charities, and for such film and television work.21

Interconnected with such costumed recreations are also several kinds of material and computer simulation and computer and film animation used in the series; these derive from both film special effects and gaming environments. When so connected living history recreations become available to be understood also as similar simulations for action adventure and trial and error understanding.

Add to all these more and different simulation effects, for example the now taken for granted televisual movement across objects accompanied by narration of historical meaning, what iPhoto for example calls ’the Ken Burns effect’. And another, now common, documentary device, in which narration by expert talking heads of past events and activities is overlaid upon pictures of those same venues in the present, where past and present are seen and listened for simultaneously. One such sequence in the series, created together with a computer simulation, visually represents for us speculations about the innovative scaffolding used by Leonardo to finish off Brunelleschi's dome in Florence. Similarly narration by actors voicing the words of Leonardo can be laid over present day venues or over fictional scenes. Finally, there are repeating sequences of reenactor battles, of flying papers animations, and of a surreal Mona Lisa door opening upon reenactments, all used to connect edited sections in stirring montage effects.

The range of reenactments, example piled upon example, used in this one documentary spans hobby, semi-professional and professional historical interpretation; computer gaming, animation and film effects; battles and contests; and material culture display such as in museum and national trust sites. Less obvious to connect as reenactments perhaps are the medical, bio-mechanical and aviation development sites and uses described in the series. For example, in layer upon layer of simulation robotic engineer Mark Rosheim's own robots are inspired as reenactments of Leonardo da Vinci's automata designs as well as indebted to his modeling of the human wrist. Add now as more trial and error simulations all the scholarly and fictional narratives of the series, conflated in various ways, that shift the centrality of authoritative knowledges without deauthorizing them, and open onto alternative knowledges, without valorizing them.

All these, not exempting traditional scholarship essential to the series or research such as Leonardo's own, contribute to ranging affects and sensations displayed and available for vicarious experience by viewers as reenactment.

The epistemological or knowledge maker melodrama enacted in this series emphasizes what we could call pastpresents, run together all in one word, in which pasts and presents very literally mutually construct each other.22 They do so before our eyes in multiple and concrete forms of reenactment, forms in which it is impossible to keep some singular and differential past and present apart. Nor is it just new knowledge about Leonardo that is displayed in the documentary but also scientific and technical knowledges coming into being today as part of interactive relationships with Leonardo objects crossing time.

And the sense of the documentary is that today these interactive pastpresents are actually necessary for important forms of knowledge making, not limited to teaching knowledges in entertaining ways. Such making and sharing of knowledges are not properly separated; in use they are brought together.

**It's an experiment**

It is in these multiple versions of reenactment added among the show's formats of comparison that we also perceive how this television series is an explicit experiment in communication across knowledge worlds. Please note that the word ’experiment’ in this context does not mean something cutting-edge new, something original and novel at this historical moment. The reference is not to ‘experimental’ art, as in electronic literature, or to special effects startling and experientially intense on some movie screens or computer environments. While these experiments charted here do indeed play with sensation and affect in multiple modes in the very traditions of melodrama, it is not with the purpose of shifting, say, physiological thresholds of intensity; and while they also do embody historical specificities, these specificities are not offered as radical disjunctures from pasts. Connection and continuity are important here.

In other words, these are not descriptions of experiments that jump out and yell ‘I am an novel experience!’ although, sometimes quite subtly, they may be a bit novel. Rather, the better these experiments work, the more possible it is that they can be taken for granted and added to workable infrastructure, material and conceptual, already in place.23 That said, some are new, some require new media amid technologies of cognition and sensation. But such newness can be valued and valuable in quite incremental variations. And some of these newnesses are worth questioning and devaluing, critiquing and appreciating. Experimental does not mean good, or better, or successful or progressive. What it does mean is trial and error learning and making taking place in multiple layers and units of interaction and articulation.

The very sense of Leonardo's ’genius’ in the series is that many of his conceptions might now be completed or, even better, used, once they become understood among contributing elements of present day material and conceptual infrastructure. Reframed epistemologies, those between ideas of Leonardo as artist and Leonardo as engineer, contrast his conceptions, on the one hand as fantasy machines, and on the other hand as potential working models for devices of use. The cardiac surgeon, the robotic and bio-engineers look to Leonardo not for one-off artistic successes; for single objects passing through time as unique and unmatched – that is to say, the Mona Lisa. Rather, opening up an initially surreal Mona Lisa door into reenactment (one of the arresting repeating sequences in the documentary),24 instead they look to Leonardo for experimental, interactive and recontextualizing ways of viewing always interconnecting bits of the world, ways that open onto devices that enhance and play with those views.

These devices are thus themselves agents among agencies and can be used in ways both conceived by Leonardo and not remotely conceivable by him, the results of trial and error learning and making for which gaming and other current interactivities can be considered epistemological short-hand.25 Thus, as a kind of reenactment, the work of collaborative teams creating models today for a television series, from drawings among pasts, can be connected to other experiments in learning and communication as well as to other practices involved in knowledge making; experiments conjured up by phrases such as ’experimental archeology’ or ’living history’ or ‘gaming simulations’.

**Affects and sensations as cognition and evaluation**

All these terms and activities, as included within or apart from the term and activities of reenactment, themselves excite different affects and sensations taken together with a range of judgments by specialists of various sorts with specific interested ways of understanding: scholars, curators, historians, television producers, authors, journalists, hobbyists, craftspeople and more.

For example, when someone asks me what my current book is about and I say ‘reenactments’, sometimes the immediate response is ‘we don't do reenactments’. That usually signals the end of any conversation. For the purposes of more conversation the more promising response is ’what do you mean by reenactments?’. In either case, though, people may well have strong feelings that go together with strong evaluations of what THEY mean by the term reenactment. These are the sorts of definitions I call ’intensive’ definitions, definitions that mark out specific communities of practice amid knowledge economies and culture crafts, publics, and industries. Such intensive definitions may be part of elaborate taxonomies of this large extensive area I am referring to by the term reenactment. Some folks may be strongly declarative in explanation of such taxonomies and in their careful differentiation of various forms they would not use the term reenactment to name, differentiations specific to their forms of expertise and evaluation. Pleasure or animosity may mark these careful differentiations, and I have had some great conversations with this focus and some very difficult ones.26

So, with all that in mind, let us cast these intensities in terms of Leonardo's Dream Machines in one interested staging of its various forms of reenactment. The TV contest between teams and with Leonardo is intended to create drama and pleasure in understanding quite detailed points of expertise ordinarily of interest, perhaps quite passionate interest, only to a limited membership of folks in specific communities of practice. Grain of detail is the signal of and for membership in particular communities of practice. Notice that these communications are not about referring to some general sort of knowledge that everyone already shares or even should share. Rather it is about teaching folks with alternative expertise to take a lively interest in and journey among knowledge worlds, even to invest in knowledges they do not have, yet. But this grain of detail is carefully limited and dynamically interconnected, via reenactment, to a range of possible interactive contexts, not all salient or available to every viewer, but presumably each salient and available to various sets of some of those viewing. This is an element of that scoping and scaling activity that reenactments produce, and of that ability to address diverging audiences simultaneously.

Such transmission skills were especially honed in the nineties, when they became experiments amid the ideological complexities of the so-called culture wars, themselves elements in the turmoil of knowledge, culture and entertainment economies restructuring and intertwining under globalization. Privatization and public financing are important pivot points in various dynamics of any such stories.27 Notions of what count as authors and audiences are too. Having to address many diverging audiences simultaneously and having to author knowledges as merely one of multiple agencies with very limited control are both circumstances that become more and more intrusive for various communities of practice. I understand Leonardo's Dream Machines and similar science-style television documentaries to be, quite inadvertently and yet necessarily, themselves reenactments of these very shifts in authorship and audience as they wade among and exemplify products of knowledge, culture and entertainment industries as these altered in the nineties. I understand my own work in this way as well.

That the male engineers, the male and female art historians and the woman pilot – all of them different sorts of white Europeans or Anglo-Europeans on, and at the side of, the stage of a new multi-racial, multiple cultural European Union – that they disagree on what technologies of control the pilot will be able to have in the working model of Leonardo's glider dramatizes a kind of culture shock. It is the culture shock of those who, on encountering different knowledge worlds, at first think they are all talking about the same things and sharing conventional ways of evaluating them. But they discover quickly, in various gradations of surprise, that nothing of the kind is the case, and that all these knowledges and this reaction are going to have pivotal consequences.

The claim by knowledge engineers that the 20 disciplines that came into being in 1900, today have fractured into 8000 specialized topics in science alone, probably better reflects this sense of culture shock than it does a precise history of knowledges and their specificities. In the nineties transnational image and media wars, contexts for various reenactment-heavy, science-styled television documentaries, refigure the multi-racial, multiple cultural European Union amid globalizing connections and competitions, those with the US and those with cultural industrial districts around the world.28 At the same time, globalizing culture industries more and more clearly include academies in refreshed associations with heritage and enterprise ‘culture’.29 Of course, including academies means we have to include ourselves, in such a journal as this one, its capacious title Writing Technologies, amid shifts in knowledge workings and global academic restructuring. And while we all traffic in knowledge worlds, indeed broker culture shock, we experience it ourselves, are dislocated by it all, and work, whether we like it or not, among our own experiments.

**What makes it possible to realize and take pleasure in this? Not exactly a conclusion**

The degree of experience and the range of affects individuals have and desire amid such clashing knowledge worlds is also specific to their forms of specialization, while their skills in working with, resolving, polarizing, overriding or describing these clashes precisely vary with such experience among these specializations too. The policy, intellectual and economic trajectories of the term ‘transdisciplinary’ signal some of this complexity and risk as well.

Making all of this relatively explicit and highly interactive adds another layer of sensation and affect to the epistemological melodrama of Leonardo's Dream Machines. With viewers vicariously participating, the show creates their pleasure with experiences made simultaneously exotic and familiar; these just frustratingly alien enough to actually be nodes in trial and error learning, yet satisfying and successful enough to keep viewers hooked on their own sensations of shifting cognition and intensities of affect, however plain or subtle, hooked on sensations of their own possible agencies in groupings beyond individual control.

The narration of the show presents it simultaneously as many events that have happened across pasts, all to be filmed in a variety of forms of reenactment, but which can be experienced as if happening in the now of viewing. Costumed actors play characters in various reenacted incidents in Leonardo's life as well as in subsequent ones, involving in particular his notebooks, art works or devices: these objects, knowledges and people that outlive him. Graphic bits of animation frame patterns produced within these various kinds of reenactment, sometimes blurring them together, sometimes separating them out, recombining them and literalizing the difficulties of that one word pastpresents. These are all experiments in various kinds of inclusion and connection; – some in movement across authoritative knowledges, watching the center of authority shift; – some in displays of alternative knowledges, where a contrast of knowledge against knowledges alters their value.

In other words, to create viewing communities where folks feel included, the exclusions of authoritative knowledge need to be repositioned. Knowledges cannot be just separate territories with their unchallenged experts where viewers enter as strangers. Instead viewers are encouraged to compare and value new knowledges, encouraged as both strangers and companions to take up some steps in journeys among knowledges we discover already exist but are not yet finished. These kinds of learning do not simply consume knowledges but rather use them, use them in ways that both remake and newly make them. Not knowing some knowledges may even offer a valued venue from which substantive contributions become possible; peripheral participation offers insights into using that full membership in carefully bounded and authoritative communities of practice actually hides. In travel knowledges look newer and older accordingly. Viewers and other peripheral participants become users as learning and making knowledges are interconnected and valued quite literally in demonstration. Such characterizations of learning are not original ones;30 but they have their novelties staged in the particular venues of these television genres where, amid televisual technologies, they generate excitement as experiments in melodrama and reenactment.

**Afterword: what happened in the nineties? Google Map Views in contextualizing process....**

And what might a Google satellite mapping offer to such action among reenactments? How are scoping and scaling activities of reenactment in ways emerging out of the nineties?

Scoping out we can map three large social domains of power/knowledge relations pertinent to considering networked reenactments as flexible knowledges under globalization. These domains work to consider writing technologies as academic concerns as well. Investigating these domains requires simultaneously attending to flexibility among scope and scale, carefully indexing cognitive sensation and affect among political meanings, and reflecting upon passionately motivated abilities to denaturalize without deauthorizing. Uncertainties and ambivalences, material and political, embodied by Google – among them, say, its multiply cultural academic founders in the US dotcom boom of the nineties; its writing technologies including but not limited to inscription; its technological and political optimisms, intentions (’don't be evil’) and naive necessities, its taking on of such giants as Microsoft in ways very much to its own benefit – these all are reference points for evaluation and judgment among flexible knowledges in these three domains.31

And Google also maps among all three in ways that matter to reenactments, in several intensities. This is how I describe these three domains: ’knowledge work‘ – that is to say, work cultures centering knowledge and information systems and technologies as economies themselves and as forces in various economies; ‘culture crafts, publics and industries’,or, public culture sewn up with economic development amid shifts in cultural value, all displaying in varying proportions among old and new technologies of entertainment. Think of the culture, history and science wars impacted by so-called ‘heritage culture’ and ’enterprise culture’. And add ’academic capitalism’, where is displayed recombinations of national interests, global economies and ideological shifts in the nineties that develop across the Anglophone academies, evident in various forms of privatized education and technology transfer and favored by both (US described) neo-liberals and neo-conservatives.32

Imagine viewing these as Google's trademark hybrid maps in several kinds of view, say, satellite or terrain view marked up with names from street view, with the traffic view button pushed. In Google hybrid view these three ways of tracking can be overlaid upon each other in particular venues, and, as with Google, we can pan in and out, or move our point of reference around a bit to work with the specifics of any particular view, dynamically scaling and scoping. Although roughly the same area keeps coming up – this extensive ranging infrastructure I use the term reenactment to create connections within – each view actually emphasizes different features amid quite specific forms of relationality.

And, scoping and scaling action in these domains, as in reenactment, necessarily operates amid a pastiche of timeframes, all too similar to a Google map's ‘real time’ of traffic flows in color, its montage effects of time and place and national security served up as satellite or, differently, as street view; and its longer more fundamental features offered as terrain. Duration, political meanings, and myriad embodiments and materialities are at stake in what might at first seem like a god's eye view, but, quickly we refresh seeing and being its more material embodiments ourselves. (‘That's my car in front of my house there, but with the old roof, how many months ago?’) Locating us inside Google mappings rather than outside, denaturalizing our own movements among knowledge worlds and memberships, among authoritative and alternative knowledges and politics is a way of seeing ourselves under satellite view not in the god's eye, but in a humbling inclusion among academic political opportunities and exigencies.

Reenactments are not a way to keep pasts and presents apart – or a way to keep authorities and alternative knowledges, metaphors and referents, materialities and abstractions, forms of academic expertise and cultural entertainment, or affects and cognitions separated, managed, or delimited by membership. Flexible knowledges, transdisciplinarities, writing technologies, all plunge us into uncertainties, risk, collusion and collaboration; conditions that – as with responsibilities to multiple audiences from painfully limited authorships – we do not control, and in which we are elements in emergent reorganizations of knowledge economies.

Scoping and scaling keeps relocating the agencies we do have as we discover that agency and control are never at the same scale of analysis. Consciousness at the levels of infrastructure, variation, inclusion, undecideability, means we are ‘bits’ of such transdisciplinizing ’consciousness’, not a Leonardo-like ‘Man’ at its centre.33 Labouring to participate in a universe in which we are only some of the objects, devices, things, processes and trial and error reassemblages in self-organizing ’learning’ is one work of reenactment. Engaging cognition as sensation and affect is another.