In the history of mechanical contrivances, it is difficult to know how many of the automata of antiquity were constructed only in legend or by actual scientific artifice. Icarus’s wings melt in the light of historical inquiry, as they were reputed to do in the myth; but was the flying automaton, attributed to a Chinese scientist of c. 380 BC actually in the air for three days, as related? (The same story is told of Archytas of Tarentum.) The mix of fact and fiction is a subject of critical importance for the history of science and technology; for our purposes, the aspirations of semi-mythical inventors can be as revealing as their actual embodiment….

Mediating between ‘nature’ and ‘culture,’ the machine’s presence in the imagination long led to speculations about its autonomy and sentience. By the enlightenment, machines began to acknowledge rationality (for better or worse) in performing feats (real and illusory) of reason (chess playing, flute playing, writing) that seemed stunning in their effects. Joining technologies of mechanics with those of electricity or magnetism, these machines were enlivened in forms that linked life to circuits driven by an understanding of the mutability of energy.

Already by the 18th century research was accomplished in demonstrating that electricity moved through circuits, and in a spectacular display, though bodies. In 1746 Jean-Antoine Nollet spread some 200 monks coupled by lengths of wire (reportedly nearly a mile) building a human circuit into which he discharged a battery shocking a network of charged bodies no doubt wincing in their currency—dare one say the shock of modernity (he later replicated this with 180 people for Louis XV). By the end of the century, the work Ben Franklin, Luigi Galvini, and soon Allesandro Volta, Marie Ampere, Hans Oersted, demonstrated principles of circuits, force, conduction, storage, and current. It is also no coincidence that Julien de la Mettrie’s book *Man a Machine* (1748) or Jacques Vaucanson’s automata (most famously *The Flutist*, and *The Duck* of 1738) emerged in a culture which, in the words of Siegfried Giedion, “the miraculous and the utilitarian co-existed.”

Electrification was to become as much a driving force as it was to signify a critical stage in the discovery of an animating principle that would revolutionize medicine, physics, economics, communication. Under a rubric of circuits, *vitalism* could demonstrate (through Galvini’s work) what Bruce Mazlish called “the galvanic twitch,” the contraction of muscles of frogs legs turned into electrical circuits while Mary Shelly’s *Frankenstein* “propagated the idea of the incontrovertibility of forces, linking the animate and the inanimate through galvinism, magnetism and electricity.” Under the rubric of
circuits, the Telegraph would hardwire the links between communication and economics as it systematized the eccentric (and already widespread) optical codes of torches, semaphore, and light into the Morse’s code and created ‘the Victorian internet.’ Under the rubric of circuits, internationalized train routes (and standards) would join ‘route and vehicle’ (and link them with the telegraph networks for both efficiency and stable contact) in what Wolfgang Schivelbush called the ‘future shock’ of the 19th century, a paradoxical mobility that “as Ruskin puts it, these are human parcels who dispatch themselves to their destination by means of a railroad, arriving as they left, untouched by the space traversed.”

It is no surprise that Schivelbush’s *Railway Journey* contains a parenthetic section (an “excursion”) called ‘The History of Shock.’ And though the ‘excursion’ is focused on the traumatic history of the concussions of militarism, its ‘shock’ also, like that of the electrical jolt, propelled the transformation of space and time into an industrial modernity that was now to be electrified. This integrated system displaced hierarchies, ‘democratized’ information, incorporated communication, regularized labor, destabilized locality, externalized imagination and, in the end, potentialized experience in a way that radically altered memory, identity, and presence by temporalizations that were both fragmentary and urgent. Iwan Rhys Morus identifies the “cultures of electrical experiment” that multiplied throughout 19th century England, and that conceptualized electricity as both economically discursive and culturally disciplining.

As Kittler writes, “The media revolution of 1880, however, laid the groundwork for theories and practices that no longer mistake information for spirit.” In this “so called Man is split up into physiology and information technology.” Small wonder that the “Gramophone, Film, Typewriter” (the title of Kittler’s pivotal study) metaphorized a culture riveted by the recording and playback apparatuses of sound, sight, and writing. The machine, the code, the ‘annihilation’ of distance, unimagined mobility, joined with the calculating machine, the animation of images, the networks of light, the network of the telephone created a vast network that could seemingly create life (and take it as well) with the same energy source that triggered light, communicated across oceans, or encoded representation as signal.

This *electrical modernity*—soon to be a quantum modernity—shattered continuities and laid the foundation for a 20th century whose relentless crises oscillated between technology and power, matter and quantification, representation and shock (the trope for the avant-garde), artificiality and materiality, the ‘imaginary’ and the ‘real,’ the apparatus and the system.

2. Though quickly rooting itself in the creative practices of 20th century art, the mediazation of creativity has only slowly—if not grudgingly—begun to be assessed in a critical perspective. This ‘media archaeology’ though is less an attempt to resurrect ‘dead’ technology than a reconsideration of the systemic reciprocity between media (in the broadest sense) and its effects. Rather than excavation, media archaeology aims at reintegration, looks at the failed trajectories, disregarded (willful or not) possibilities, as it traces histories largely ignored by the egregiously westernized—perhaps incorporated is better—narrative of dominant (read victorious) media industries that leads to the linear and progressive simplifications that one media follows logically as the offspring of another.

Several attempts have been made to assess and examine the development (and less the archaeology) of the mechanizing effect: *The Luminous Image* (Stedelijk 1984), Jean-Francois Lyotard’s *Les Immatériaux* (Centre Georges Pompidou 1985), *Video Skulptur* (Cologne Kunstverein 1989), *Passage de l’image* (Centre Georges Pompidou 1990). Two exhibitions, however, bear directly on the history of the relationship between the apparatus and electricity.

Pontus Holton’s *The Machine as Seen at the End of the Mechanical Age* was one of the first ‘surveys’ attempting to locate the transition points between technologies and art. It was at once a history and a requiem. It’s elegant metal-covered catalogue announced: “This exhibition is dedicated to the mechanical machine, the great creator and destroyer, at a difficult moment in its life when, for the first time, its reign is threatened by other tools.” It traced a history back to da Vinci’s *Flying Apparatus* and Jacques Vaucanson’s *Duck* to Leon Harmon and Kenneth Knowlton’s *Studies in Perception*, and Richard Frankel and Jeffrey Raskin’s *Picture Frame*. Holton’s essay looks at the machine as a reverberating influence on art and draws a line between the Greeks through Futurism, Dadaism, Kineticism, Constructivism towards the introduction of the ‘other tool,’ the computer. The sober text often ruminates—evoking Chaplin’s “speech” to the audience in *The Great Dictator*—and ending with remarks like:

Perhaps what is most frightening is the notion that modern technology has an evolution of its own, which is uncontrollable and independent of human will. Many economists and technicians speak as though they were merely explaining inevitable processes—deterministic laws analogous to natural laws, that govern the development of technology. In their fatalistic view, products and consequences of tech-
nology and mass production simply do not grow by themselves, like a landscape.

... To paraphrase what Tristan Tzara once said about Dada: “No one can escape from the machine. Only the machine can enable you to escape from destiny.”

More specifically related to bridging of historical and contemporary practices was the 1983 exhibition Electra: Electricity and Electronics in the Art of the Twentieth Century sponsored by Electricité de France to mark the centennial of the Society of Electrical and Electronic Engineers. An expansive—if problematic—investigation, its curator, Frank Popper outlines an enormous project:

starting from iconographic allusions to electricity over the last hundred years... via the use of electricity for producing light and other effects accessible to the human senses and finally to computer-generated images.

However this exhibition remained also a pretext and a privileged example to illustrate a more general problem: the relationship between art, science and technology at the present time which, coupled with the sociological questions it raises, is one of the main currents of contemporary art in opposition with, or rather complementary to, other topical tendencies in art such as the widespread revival of painting."

A collaborative effort, a committee of specialists (that included Popper, Marie-Odile Briot, Edmond Couchot, Jean-Louis Bossier, Itsuo Sakane, and many others) and institutions (including IRCAM, CAVS, Parc de la Villette), the exhibition, according to Popper, attempted to take into account “different factors without imposing a definitive order, but rather suggesting a variety of itineraries.” Three aspects “of the artistic use of electricity” were outlined: its “iconographic use in painting, drawing, sculpture,...” its “energetic’ use as an independent artistic medium creating certain physical manifestations or effects such as electrically produced artificial light or sound,” and “finally its incorporation in machines or other apparatuses serving as support for artistic communication, diffusion, modulation and manipulation of information such as photocopying machines, video electronic appliances and digital computers.”

The exhibition appraised the three territories and included an astonishing range of works (from Jean Tinguely and Wolf Vostell, from Jean Dupuy and Berhard Leitner, from Alice Aycock to Orlan, from Sonia Sheridan to Roy Ascott—with many in-between). The essays in the catalogue reflected broadly on the history and possibilities. Marie-Odile Briot, in Electra-Memories: Electricity at large in Modernity, writes “Into the word ‘modernity’ we blithely place the myths of progress, of the avant-garde and their attendant deluded ideologies—revolution, the march of history.” Edmond Couchot remarks that “the image, and perhaps the whole of art, is no longer characterized by metaphor, but by metamorphosis.”

Emerging at the high-point of the clash of modernisms in the 80s, such sweeping surveys would inevitably be conflict zones. To be sure Popper’s position is clear that “the exhibition attempted to go beyond this theme by trying to demonstrate that a scientifically based technology can help liberate an artist’s creative powers as well as the public’s faculties of appreciation and interactive involvement...” Katherine Dieckmann, in an extended essay (in an important special issue of Art Journal, Video: The Reflexive Medium edited by Sara Hornbacher), “Electra Myths: Video, Modernism, Post-modernism,” writes: “Electra charts a model of rational development” a “serial presentation of ‘just facts’... Electra's bluntly utopian presentation is a disturbing document of our time—art historical and otherwise... . Its artworks are exempted from investigation into the nature of their mediums by the protective cloak of a scientific (rational, linear) perspective; with this isolation, Electra propagates a modernist progress without consequence.”

Yet for all its problems Electra was an acknowledgement of the reverberations that haunt the history of art in the 20th century and a harbinger of the split between mainstream media and the experimental scene that was developing around it (Ars Electronica, for example, was formed in 1979).

By 1990 the Pompidou organized Passages de l’image (coordinated by Raymond Bellour, Catherine David and Christine van Asche), an exhibition that traveled to Barcelona, Ohio, San Francisco. Broad and well conceptualized, the exhibition was proposed as “an attempt to delimit and reveal passages that occur today between photograph, cinema, video and "new images" in a form that revealed a “double tension between immobility and movement and between the analogical representation and what suspends, destroys, corrupts it...” Including an extensive video program and a series of installations, the exhibition included Dennis Adams, Geneviève Cadieux, Gary Hill, Thierry Kuntzel, Chris Marker, Marcel Odenbach, Michael Snow, Bill Viola, Jeff Wall, Graham Weinbren/Roberta Friedman (and many others). Surely a reflection of a generational shift, Passages de l’image drew on the work of artists in the midst of
what the curators call “the point of no return in a crisis of the image.”

But, as significant as it was, the ‘crisis of the image’ was not the only stage on which the media were to be conceptualized. Intelligence (artificial and otherwise), consciousness, computation, robots, automatons, cyberbobs, androids, aliens, replicants, filled the popular imagination of science fiction in both written and cinematic genres. Frankenstein, the Golem, Maria (in Metropolis), amongst many others, now sat astride Cadek’s R.U.R., Asimov’s I, Robot, HAL (in 2001), the replicants of Blade runner, Robocops, Terminators, and the dozens of variants that morphed the boundaries between humans and their hybrids. The puppet, robot, and automaton also fill a long history in the mainstream arts from Claude Cahun and Hans Bellmer through Dada and Surrealism and through Valie Export and Cindy Sherman,20 a history being written within the feminist reconceptualization of the representation of women in the pages of Afterimage, Discourse and particularly Camera Obscura.

With this sketch as background we might conceptualize a shift from an electrified modernity to an electronic post-modernity in which the simple circuit is supplanted by the integrated circuit.

3. This ‘solid-state’ in which the electronic disciplines of robotics, neo-biology, neuro-cognition, artificial life and/or intelligence, cyber-democracy, non-located power, electronic economics, profiled authenticity, or pervasive surveillance predominate, cannot be sustained by the reinvention of simple dialectics nor by the analysis of it within traditional discourses of sociology, psychoanalysis, or critical theory. Instead, the seemingly provisional and fast changing sources of techno-authority, masked behind the metaphors of open-systems, specialized protocols, mystifications of cyber-democracy, and by a glaring lack of historical theorization, have developed a kind of nomadic expertise paradoxically legitimated by its very lack of centrality and by its intransient allegiance to the principle of technical reason. Yet the less capitalized disciplines of cultural studies, psychoanalysis, or sociology have found stable positions in the now retrenched institutions of academia, marginalized journals, weblogs, and seem unprepared to confront social, cultural, and individual transformations that have exploded the borders between reflection and experience, identity and singularity, the body and its mechanism, the public sphere and the pseudo-spheres of electronic collectivity.

Supplanted by notions of constant immediacy, mutable or schizoid selfhood, the noospheric illusions or increasingly regressive “publics” of the cybersphere, the challenge to the social sciences is as much to confront extant and emerging change as it is to abandon inert, rhetorical, and often essentialist observer-based models (whose effectiveness seems less and less relevant) to adaptable systems in which the shifting terrains of politics (as they are circumscribed by technology industries), subjectivities (as they are extended by communications, neuro and cognitive technologies), to embodiment (as it is prostheticized), or “publics” (as the crumbling of the spheres of localized correspondence are de-spatialized into zones of contentious nationalism), emerge as signifiers of transformation in which instability itself is contingent and situational.

If issues of the shift from “nature” to a culture mediated and controlled by technology represents one facet of the response to ‘computer-produced progress,’ the issue of identity, embodiment, autonomy, agency, are yet another. One significant aspect of the ‘simulation industry’ is found precisely in posing this question in stark terms. Indeed recently the implantation of a nearly portable artificial heart, the advanced research into carbon-silicon transmitters, no less the now common implantation of computer controlled pace-makers) runs parallel with a revived discourse of robotics and the inevitable systems mentality that comes with the presumptions about the control mechanism signified by the ‘completion’ of the sequencing of the human genome. In this system mechanical prosthetics mutate into nano or bio prosthetics that refounce many issues of a human-machine discourse whose history is embedded deeply in the social imaginary.

In a culture that Frederic Jameson once described as “triumphantly artificial,” the contrast could not seem more contradictory. The assimilation of so-called artificial technologies into the body is more than a signifier of a triumph of informatics, it is one in which the border between the self and the systems put in place to regulate its operation is slowly eroding. Already enveloped in a surveillance economy that interposes itself in pervasive panoptical and logistical presence, the fragile economy of identity teeters between autonomy and integration. But the ‘mechanization of the world picture’ (specifically as a form of representation distinctly related to human subjectivity) is transformed by the autonomization of or detachment of systems (vision systems, genetic systems, cognitive systems, motor systems) as embodied agents and disembodied functions. Thus emerge forms of identification joined less with presence and more with markers (genetic ‘fingerprints,’ retinal scanning, etc.) that establish authenticity as an aspect of the desubjectification of the self and the objectification of the body as code.

This strange circumstance is reflected in the esca-
lating array of electronic appendages linking us to a paradoxically wireless ‘umbilical’ interdependence with an omnipresent info-sphere. In this sense, the absence of information itself seems suspicious and the social staging of identity is bound to forms of legitimation linked less and less with embodied presence and more and more with disembodied verification (and one in which the current criminal rage for ‘identity theft’ emerges as a signifier of the status of incorporeal individuality). The image, the passport, the license, even the fingerprint, long understood as legal forms of identification, have become obsolete and are being replaced with biometrics, genetic markers—technologies that pose identity as encoded in systems of measurement, in technologized forms of info-profiling, in reductive and elaborate systems that demolish identity as anything more than the accumulation of data. As Donna Haraway writes, “Late 20th century machines have made thoroughly ambiguous the difference between natural and artificial, mind and body, self-developing and externally designed... Our machines are disturbingly lively, and we ourselves frighteningly inert.”

N. Katherine Hayles’ *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*, opens with the following: “This book began with a roboticist’s dream that struck me as a nightmare.” The dreamer, Hans Moravec, evangelized for sentient machines with stubborn zeal and though Hayles focused on *Mind Children*, his final book, *Robot: Mere Machine to Transcendent Mind*, leapt into the speculative pseudo-theologies of machines with the kind of loopy logic that characterizes many of the dreamers of ‘collective intelligence,’ ‘Technoetic Aesthetics,’ or other artificial paradises. With extraordinary pertinence, Hayles’ situates her argument:

Moravec proposed that human identity is essentially an informational pattern rather than an embodied enaction. The proposition can be stated, he suggested, by downloading human consciousness into a computer, and he imagined a scenario designed to show that this was in principle possible. The Moravec test, if I may call it that, is the logical successor to the Turing test. Whereas the Turing test was designed to show that machines can perform the thinking previously considered to be an exclusive capacity of the human mind, the Moravec test was designed to show that machines can become the repository of human consciousness—that machines can, for all practical purposes, become human beings. You are the cyborg, and the cyborg is you.

Hayles’ book, too long to fully summarize here, investigates informatics as an essential component of the reciprocity between techno-science and creativity and suggests that the narratives of science are not far from the fantasies of fiction as they speculate on future life, intelligence, virtuality, or the body. In the end the illusions of AI join the illusions of AL: “By positioning AI as a second instance of life, researchers affect the definition of biological life as well, for now it is the juxtaposition that determines what counts as fundamental, not carbon-based forms themselves.”

Crossing this line, however, does not imply that the ‘posthuman condition’ is characterized by the inevitable loss of selfhood, and Hayles continues:

When Moravec imagines ‘you’ choosing to download yourself into a computer, thereby obtaining through technological mastery the ultimate privilege of immortality, he is not abandoning the autonomous liberal subject but expanding its prerogatives into the realm of the posthuman. Yet, the posthuman need not be recuperated back into liberal humanism, nor need it be constructed as anti-human. Located within the dialectic of pattern/randomness and grounded in embodied actuality rather than disembodied information the posthuman offers resources for rethinking the articulation of humans with intelligent machines... If, as Donna Haraway, Sandra Harding, Evelyn Fox Keller, Carolyn Merchant, and other feminist critics of science have argued, there is a relation among the desire for mastery, an objectivist account of science, and the imperialist project of subduing nature, then the posthuman offers resources for the construction of another kind of account. In this account, emergence replaces teleology, reflexive epistemology replaces objectivism; distributed cognition replaces autonomous will, embodiment replaces a body seen as a support system for the mind, and a dynamic partnership between humans and intelligent machines replaces the liberal humanist subject’s manifest destiny to dominate and control nature.... Just as the posthuman need not be antihuman, so it also need not be apocalyptic.

**4. So the automaton appears as a sub-machine which, depending on our fantasies and the logical way our reason works, connects up with the super-machine, often taking on its attributes, as if myth and technological utopia were conspiring in some osmosis of the ‘progressive imag’ and the ‘screen image.... Sharing in the trickery of the automaton is merely another way to define ourselves as human, as both being and nothingness, presence and absence: the automaton**

KEYNOTE SPEAKERS
is, in a way, our mirror...or our evil eye.\footnote{Jean Claude Beaune writes in "The Classical Age of the Automata"}

The convenient reading of the ‘posthuman’ as the substitution of the body by technology, would miss the complexity of a phenomenon that breaches many disciplines and touches upon identity not merely as a reflection but in intricate forms. Bruno Bettelheim’s case history in childhood autism Joey is a case in point. “If he did anything at all,” Bettelheim writes, “he seemed to function by remote control—a ‘mechanical man’ run by machines that were both created by him and beyond his control.”\footnote{He built a “breathing machine,” a “car-machine”, “breathing apparatus,” had a “carburetor,” “transistors,” “exhaust pipes,” and electricity since “he had to plug himself in.”} He was a boy who is a machine.\footnote{In the essay Delusional Circuitry Hilary Strang reflects on this in ways that evoke Hayles’ reading of “liberal humanism” and the posthuman condition:}

Joey the mechanical boy is legible as a site in which a particular rational humanist project of representation is temporarily broken down, and construction of the productive body is momentarily frustrated. Bettelheim describes Joey’s story as “a cautionary tale” (Bettelheim, 234), explicitly setting this narrative apart from the ‘case history.’ A “complete catalogue of [Joey’s] symptoms,” the relied on format for documenting therapy, “would fall short of the true picture,” and Bettelheim notes that his ability to represent this case fell apart in other ways as well: “Maybe a measure of our awe, and our rejection of the uncanny, shows up in our failure to take pictures of the most elaborate devices Joey created for running his body and mind. Only after this phase was in decline did we have sense enough to photograph them. Unfortunately they show the machinery that ran him at night in the very reduced form it had taken after a year and a half at the School” (Bettelheim, 236). The confusion between human and machine that seems to block representation, also threatens the ability of capitalism to construct subjects as productive bodies, a process which Deleule says relies on a maintained hierarchy of functioning, on “the juridicial separation between the body/machine” (Deleule, 207).

At the same time it is possible to read Joey the mechanical boy as a matter of (a particular) course, as ‘exactly what you would expect’ from late industrial capitalism. Not only because, as Canguilhem and Deleule argue, the machinic and the human are historically inseparable, because “machines can be considered as organs of the human species” (Canguilhem, 55), but because ‘what else’ could a flow of signs that includes Taylorism, Popular Mechanics, Turing machines, the space program, World War Two, the atom bomb, stream-lined kitchens, produce but a boy who is a machine?

As Canguilhem argues, “the theory of the animal-machine is inseparable from ‘I think therefore I am’” (Canguilhem, 52), inseparable from the project of Enlightenment rationality. As Bettelheim argues, “the typical modern delusion is of being run by an influencing machine... Just as the angels and saints of a deeply religious age help us to fathom what were man’s greatest hopes at that time, and the devils that he trembled at most, so man’s delusions in a machine world seem to be tokens of both our hopes and our fears of what machines may do for us, or to us” (Bettelheim, 234). The animal-machine, human-machine is “uncanny” and poses a threat to “cataloguing,” to the rational project. Why do the logic of heart as pump and the threat of legs as extensors exist simultaneously? Note that this is not a matter of examining some brave new world, but (as both Canguilhem and Bettelheim point out) a question thoroughly imbricated in European-American modernity.\footnote{To think merely of the pathological effect the machine, however, cannot suffice to unravel either its intricate relationship with modern life nor to expose its historical meaning. An example is Keith Piper’s installation The Automaton’s Bloodline. The work ‘dissects’ the robot, the android, and the cyborg without resorting to the tropes of mechanization that trace the mere evolution of the technologies that substitute increasingly sophisticated surrogates into the service economy, but reminds us that the evolution of our machines themselves embody discourses of class, race, history, oppression, and identities not so easily hidden in their insidious resemblance to their makers. It comes as little surprise that Piper’s interests have turned toward the cyborg, one that he describes as “a hybrid figure, physically an amalgamation of the mechanical ‘other’ with organic human ‘norm,’ but often also imaged as torn between the conflicting agenda’s embodied with the norm/other dichotomy.” The cyborg, indeed, has played a significant role in both the popular imagination of mass culture and in a kind of empowerment that forces a confrontation with embodiment that mobilizes technology. This is importantly outlined in Donna Haraway’s prescient “Cyborg Manifesto” where “the cyborg is a condensed image of both imagination...
and material reality,” in which “the cyborg has no origin story in the western sense—a ‘final’ irony since the cyborg is also the awful apocalyptic telos of the ‘west’s’ escalating dominations of abstract individuation,” and emerges as “the illegitimate offspring of militarism and patriarchal capitalism” and “is not subject to Foucault’s biopolitics.” Instead, “the cyborg simulates politics, a much more potent field of operations….”30

But Piper’s investigation of the robot, the automaton, and the cyborg, also involves historical readings that problematize the Deleuze/Guattari suggestions about ‘machinic agency,’ and aims beyond the mere reading of the androids of Metropolis or Alien, the robots of Forbidden Planet or Star Wars, the replicants of Bladerunner, but at another aspect missed in often ironic social assessments of pop culture, that of race. The cogent example in The Automaton’s Bloodline is NASA’s naming of the Mars Rover “Sojourner Truth.” Here Piper parallels “the Robot as a unit of labor, visually distinct and ‘other,’ consigned to labour, in the case of the Mars Rover, mining a harsh alien landscape in response to remote commands until its power cells are exhausted, to the body of an enslaved African.” The robot “becomes not only a cipher for an exploited economic class, but also a class who are fundamentally distinct from the dominant group.”

Many more feeble versions of the artificialization of sentience have emerged in mainstream cinema. Just think of how Spielberg’s abysmal oedipization of the Turing Test in the Hollywood version of whatever film Kubrick had in mind for A.I. Little David, the affably inane (that’s AI) creation of some kind of fairytalized cross between ET and HAL, ends up in the automaton ER after the preposterous droid ingests some decisively ‘imprecise’ spinach while learning that humans suffer from ‘cybling’ rivalries. Cyborgs, after all, can be programmed to express artificial love, but damned if they can eat. Nevertheless, the clawing proponents of AI and the sycophants of cyborg sentience can’t but crow at the attempted humanization of little David’s endearing persistence to bond with a remarkably enduring theme-park madonna sunken, for just a few short frozen millennia, in what was once Coney Island. In the end, of course, we haven’t gotten very far if the best this fake little circuit-board kid can do is pine for a virtual version of mommy. David’s problem, after all, is that he cannot age, that he was always frozen in time, unable, because of the flaws of the maudlin fantasies of his creators, to do more than fulfill the lost realities of others with aimless repetition.

As Norbert Bolz writes:

> the important thing for artificial intelligence is to risk moving from the chess board to the football pitch, that is from semiosis to the interplay of perception and understanding. The simulation of coordination which does not require communication of freely movable bodies is an infinitely more complicated task than computing possible positions on a chess board. For this reason people often speak nowadays of post-algorithmic computers, even of ‘organic computing.’ Whatever might be meant by this specifically, it is intended to mark the closureist transition from the artificial intelligence of the Turing machine to artificial life.31

Clearly, research done over the past two centuries resolutely establishes that the link between flesh and machines has been made in forms that no longer merely regulate or function merely as utilitarian prosthetic devices, but propose them as potentially integral communication systems in which messages can be exchanged. The history of this ‘interface’ has slowly fixed itself as a central issue in both the way that the body and the systems ideology that increasingly envelop it have been steered into presumptions of its smooth incorporation into electronic culture amid fantasies of ascendancy and tropes of transcendence.

At the turn of the millennium (April 2000) Wired magazine featured Bill Joy’s diatribe, “Why the Future Doesn’t Need Us.” A cross between a lament for the speculative assumptions of such zealous and vague futurists as Raymond Kurzweil and Hans Moravec (amongst others), and as a realization that technologies emerge with very real consequences (as if this were in any way a new insight), the text provoked much debate concerning the establishment of a nearly autonomous technical sphere engaged in a kind of Faustian bargain—what Lewis Mumford called the “magnificent bribe”—with the triumph of technology ‘out of control’ (interestingly the title of Kevin Kelly’s bombastic Out of Control: The Rise of Neo-Biological Civilization and Langdon Winner’s invaluable Autonomous Technology: Technics-out-of-Control as a Theme in Political Thought). One of Joy’s many resolutions: “The only realistic alternative I see is relinquishment: to limit development of the technologies that are too dangerous, by limiting our pursuit of certain kinds of knowledge.”32 “Relinquishment,” is, of course, a form of refusal even while the trajectory of the techno-sciences is accelerating toward autonomy, super-algorithms, and systems that act outside the frail and subjective valuations of human agency.

It is in this system that the implications of Stelarc’s radically materialist interventions into the boundaries of the body emerge as decisive confrontations. Rather
than conceptualize the body as an effect of computer modeling (as in the works of the last decade), Stelarc renders the human-machine interface as a site of controlled conflict, trauma, shock—in short a kind of circuit in which the ‘galvinic twitch’ loses its metaphysical aura and instead is materialized as a control mechanism rather than the ‘spark of life.’ In Stelarc’s work the interface is a kind of negative ‘dialectric’ realized through electrodes, transducers, muscle stimulators, amplifiers, forced-feedback systems, extra limbs, etc. that probe the tension—perhaps resistance—between the human and machine. In this we must distinguish it from the nearly homo-erotic weaponry in the Survival Research Lab performances, from the faux-embodiment of machine vision in Steve Mann, from the pathetic prosthetic surgeries of Orlan, from the ritualized actions of David Therrien.

Instead of ‘relinquishment,’ Stelarc prods the ‘dangerous knowledge’ that information is somehow neutral by empowering systems (and participants) to wield power and regulate actions in which command and control and communication lose innocence and implicate agency in actions that are neither painless nor devoid of real world consequence. A provocateur of the circuit, Stelarc generates a ‘future shock’ that is implicit in every action in electronic culture and, as Regis Debray writes, “no more than there is any innocent medium can there be any painless transmission.”

**ENDNOTES**


13. Popper, p.25.


18. A fuller treatment of the history of ‘media’ exhibition appears in my “Points of Origin” published as the introduction to Produced@ZKM, forthcoming from MIT Press.


23. Hayles, xii.

24. Hayles, 235.


28. Bettelheim, 236.


