Human Information Machines Express Their Concerns and Desires
A Summary of the FleshFactor Net-Symposium
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On April 7, 1997, we posted Gerfried Stocker's opening FleshFactor statement on the Ars Electronica website and I, as moderator of this on-line net-symposium, welcomed visitors to this website to comment on "the position, status or condition of the individual within the technocultural information environment."

I asked a largely unknown audience to respond to Stocker's opening statement so we could develop a sense of where people stood regarding their relationship with our 'second nature', a world densely packed with machines, networks and media memory. The essential question was and of course still is: as the world has changed, particularly over the past two decades of the digital revolution, has the nature of the individual human changed; and if so, how?

While Stocker's opening statement was posted in its original German, the focus of the net-symposium was necessarily on the English translation of Stocker's text. The net-symposium was conducted in English in the hope of extending its spectrum of participants far beyond Austria. This summary was written in the second week of June, to meet deadlines for translation and the publication of this book. The on-line symposium remained open to its community of interest throughout the summer, right up until the week of the live symposium and festival. At the time of writing we had already received over sixty messages, many of them lengthy essays in themselves.

All of these messages were informative and serious attempts to deal with difficult, often somewhat unformed ideas. First let me here express my gratitude to those who submitted texts to FleshFactor. Due to time and limits placed on the length of this text, the following summary cannot include mention of all those texts submitted. I must also add that I was humbled trying to encapsulate such a rich, complex collection of sensitive and intelligent contributions. With this said, let me proceed with the summary.

The first message came from Brian Molyneaux [South Dakota, USA]. He linked J. G. Ballard's writing to Stocker's FleshFactor in-

sight, "the future seems to have reversed directions and is collapsing upon us." Ballard had written in 1995: "The future is ceasing to exist, devoured by the all-voracious present. We have annexed the future into the present, as merely one of those manifold alternatives open to us. Options multiply around us, and we live in an almost infantile world where any demand, any possibility, whether for life-styles, travel, sexual roles and identities, can be satisfied

instantly." Molyneaux went on to state that "It is more than that. Technological change is now so fast that the old-fashioned idea of the future as a human-centred techno-utopia appears as it always was, an idle dream. Machines have never been able to wait for human development."

Molyneaux also offered some interesting comments on the difference between the artificial order of our media world and the relative disorder of nature. "The problem is that there is more to the world than the art of human production and reproduction, the extended space of the human brain. Where is the unorganized, nonhuman space? At least in the natural world we can stumble on things that are not the product of the imagination."

Sue Thomas [Nottingham, England] wrote, "Right now the Internet is peppered with the fragmented writings of its many explorers, and each has a complex and intimate tale to tell. I think that we truly are stumbling upon things in cyberspace which are not just the products of our imaginations." And "Perhaps we need to develop a concept similar to that of the UFO — but this time, the UIE — the Unidentified Internet Experience! We should be recording and cataloguing the many unusual connections which occur daily throughout this interconnected web of minds [and I do not attempt to define all of these minds as human]." Here we see a perception that signs of an emerging order are possibly surfacing as the infosphere reaches more and more complexity.

Anne Farrell [New Mexico, USA]: "I am in a constant state, literally, daily, of trying to navigate between my life-long inclination to be Nature Girl, and life as we live it in the late twentieth century. I want stuff from both of those worlds. I am at least resolved that I cannot be a purist and so I must blend." And Norman White [Durham, Ontario, Canada] added: "The discussion seems to be centering around Nature, and how it can help us understand what is happening on the Internet. The illumination works both ways. In fact, I believe the MOST important way the Net can inform us is in the way it leads us back to Nature ... not by its content, but by the way it WORKS. With its bewildering mix of "hard"data and fantasy, insight and deception, all functioning at cross-purposes, the Internet reminds me of an illustration that Gregory Bateson used to describe cultural sanity ... " White goes on to tell how Bateson makes analogies between healthy, diverse [sane] ecosystems and unhealthy, disturbed [insane] ecosystems with too few species and similar cultural conditions. White wrote: "If Bateson is correct, and I believe he is, then a "sane" ecosystem displays not so much a condition of "anarchy" as "panarchy" ... and "The Internet at present verges on healthy panarchy. There are also a thousand ways it can go insane. Perhaps its many cross-purposes can co-exist for a while. But whether the Internet grows wild, mutates, or gets paved over, may it point us to the greater internet ... the one we call Nature."

Carmen Hermosillo [California, USA] then challenged White, stating that useful analogies aside, we as a species have broken away from nature. Hermosillo: "I think that there is no road back to the garden, and that whatever road was used previously has been closed ever since the picnic became a social institution. The picnic says that we are strangers in the garden. Take Baudrillard far enough and a case can be made that 'nature' itself is a simulation, because 'nature' is mediated by perceptual instincts and filters that have been mediated by education, by Rousseau & St. Francis of Assisi, and by the art of painting, just for starters."

White immediately answered: "As an artist who has been passionately building kinetic machines with emergent behavior for over 30 years, I am certainly not one to view 'Nature' in its usual romantic sense. To close its lessons off from contemplation, on the basis that the world we have inherited is now somehow inaccessible, irrelevant or illusory, I think is

foolhardy. I would argue that now, more than ever, we need its long-evolved wisdom in dealing with power-structures and information."

Meanwhile, I had begun to "unpack" Stocker's opening statement, focusing on the value of reflection when preparing for the future. I wrote "Without succumbing to nostalgia, it may make good sense to reflect on our recent past, if nothing else to help us verify the value of our trajectory as we head into turbulent, previously unexperienced domains." Peter Charlot [Hawa, USA], responded, "The FleshFactor theme intrigues me because it assumes that we are headed towards "unexperienced domains." I think not … I don't think that there is anything that we can design or construct that is not an extension of who we are already ... We can manipulate, contract, synthesize, shatter, emphasize, obsess and squeeze various aspects of our natures. But we can't change or invent them … No matter what we come up with, whatever evolves as extensions of ourselves, they will never be as complex and marvelous as who we are now, [or a tree for that matter]. I would suggest that the thrill of the technological revolution is as old a new experience as discovering the next valley."

Statements like Charlot's established a kind of comforting rhythm of reassurance throughout the net-symposium. Charlot's statement, and those sympathetic to it, affirm that we are more like the primates we evolved from than the machines we are evolving into.

Laura Vandenburgh [New York, USA] then submitted a stunning text that literally put the whole discussion on ice for a week. She wrote: "Intellectually, I can appreciate the notion of escaping the constraints of biology through our integration with technology, but practically I'm skeptical. Even if we have set in motion changes which make our biological intelligence just a component of a larger conceptual framework, our intelligence is not just inextricably linked to the physical, it is physical. Due to the relatively slow process of biological evolution, our mind-bodies are adapted to a very different niche than the one in which we live. [Newer models of evolution describe large leaps punctuating an otherwise slow process, but they require very strong selection pressure.] In our case, it seems that that evolutionary gap or lag time can only continue to increase, because the conceptual-technological changes described are largely disengaged from selection pressures. [The ability to negotiate in cyberspace doesn't seem to be closely linked to producing a lot of offspring ...] Perhaps the more we change the world around us the more we are forced to face that evolutionary gap between what we are and what we perceive."

Vandenburgh had put her finger on one of the essential ideas of last year's Memesis symposium; an idea that links the FleshFactor symposium with its immediate predecessor. Cultural evolution occurs at lightspeed compared to the idea of four billion years of biological evolution. The tension and confusion resulting from the improbable collision of the two evolutions enhances our extreme sense of dislocation from our animal nature. Vandenburgh adds that "Stocker refers to the development of an 'intimate and intensive relationship' with this second machine-mediated environment, in which there is no subject-object distinction. Maybe that's not a new development, but rather just the waning of the 'wholly, autonomous individual' concept. Perhaps the development of a 'hybridized, networked subjectivity' is just an adaptive response to an old loss. In many cultures, past and present, individuals view themselves as having no subject-object distinction in relation to the 'first natural environment'."

At this point I prompted the net-group to consider the problems of thinking about a world made up of two natures ... "So far we have examined the relationship between a first nature [we are still animals and we have to live in 'Nature 1'] and the second nature, that which can

be identified as an artificial nature [mediated reality, computers, networks ...]. And most of the thinking on the integration or separation of these two natures positions the examiner, the wired human that apparently still has the option of shutting down the second nature whenever he or she wants ... in a special place outside or beside both natures, a special zone reserved for humankind."

Richard Brown [London, England] then contributed that "The evolution of the Human/ [Nature]/Machine is controlled by systems, functions which we appear subject to and not able to control ... We live and are supported by a cybernetic beast system, and it appears we have lost control of the reins." This is an important observation, that there is no central, global control of technological evolution.

Monika Wunderer [Vienna, Austria], referring to Stocker's opening statement, wrote: "The Human body is not only "the ultimate original" in our information-based society, it is also something that remains while space is extending and is becoming virtual." She adds: "Using computer mediated communication and furthermore using and understanding the space that is created by electronic networking does not replace the human User. I [recognize] that the human body [still exists] even in a virtual environment." Wunderer, working in the area of virtual theatre, affirms that the essential material of the actor is the human body.

Valéry Grancher [Paris, France] wrote: "Beyond the FleshFactor concept, we can perceive a lot of things, such as genetics, cyber-biology, cyber-intelligence ... Otherwise, we can perceive new technologies as human interfaces based on language." He pointed out that language, in all its complexity, always appears at the 'skin' between humans and their technologies. And "that language in this context can be compared to genetics." It is the blueprint from which technologies are created and reproduced. The interface of language proved to be a major obsession of many contributors to the net-symposium further on in the discussion.

Brian Molyneaux [South Dakota, USA] then addressed my earlier message about the problems humans face by believing they are a species somehow separate from nature[s]. "[Sherman] has identified a serious problem with thinking on human nature in the future. We are still debating within the fundamental mythical worldview of humanity, its centredness and uniqueness. This overwhelming sense of ourselves, developed by priests and philosophers and power brokers and the institutionalized, has given us the age-old dichotomies that distinguish us from 'the other': me and you, us and them, mind and body, art and science, human and animal, human and vegetable, flesh and metal. These are all Western philosophical conventions and classifications. We need to understand that as we change the world, it changes us. I can walk away from the computer, turn off that electrical window, that moving wall of information. But it is already too late. It surrounds me, no less so than the world I walk through, because I cannot get outside it. It is inside my skin, but outside my brain, because the brain [through its sensory extensions] now makes the journey."

Paul D. Miller, A.K.A. Dj Spooky That Subliminal Kid [New York, USA] then submitted a poetic history of the disembodied voice and a new definition of the self. It began: "Possible performances. Impossible narratives. Ruptured flow. Binary Dissonance. Questions of omission. The voice divorced from the body that gave it life, the face ruptured and ripped from the skull. The screen-saver: disembodied, simultaneous, play of death. Morphing. Identity in continuous upheaval, in the multiplying mirror of memory. Reproduction. Replication: Asymmetric. Telekinetic. Dialectic. Flow. The body as a site of textual malleability. The mind as a locale of total recall. Total displacement. Who's there? Erogenous,

decoded amnesia. Biopsychic paradoxes. Eclipse of the self. Prosthetic. Synthetic. Memetic. Technophilia ... "

Oliver Hockenhull [Vancouver, Canada], just back from a long tour of India, emphasized the narrowness of Western perceptions of self, especially considering that so many of the world's citizens live sophisticated lives with primitive technologies [from a Western perspective]. Considering Stocker's observation that we can no longer think of ourselves as autonomous individuals, but are forced to perceive ourselves as dynamic nodes in a social network of communication, Hockenhull wrote: "I would maintain that this social network extends throughout the world and should also demand in the West a retrieval of modes of perception [of the world, of the body, and of consciousness] that are more ambiguous, amorphic, dimensional and compassionate."

While I was enjoying the polyphonous composition of this relatively incoherent string of messages, I sensed the discussion needed another kick. But rather than trying to narrow the focus, to force clarity through a sense of coherency, I decided to open the doors even wider, hoping to generate energy. In my Mission Revisited statement, I wrote: "This is our mission, to describe ourselves as a species in the present, in our relationships with and/or in those relationships with others mediated by our technologies. This may be a huge endeavour, a study of the self at a scale the likes of the Human Genome Project, a stereo 'snapshot' of human nature taken simultaneously from human and post-human perspectives, including the breadth of cyborgological points of view, a collective multi-vision of the individual person in this day and age … Share in the authorship of a large, complex system called the self. To help us keep this unruly, polymorphous, global polyphony comprehensible, we'll simply understate its nature. We'll call it the FleshFactor." This did the trick. The discussion exploded with energy and a remarkable string of contributions.

Richard Kriesche [Graz, Austria] wrote that while he thought the FleshFactor theme was very important and intelligent in its conception, he thought there was ideological confusion in Stocker's opening statement. Kriesche: " ... there is no such thing as a 'techno-cultural development'. The development is either a technological one, with an impact on culture, or a cultural one, with a backslash onto technological development ... the technological development is driven first by capital money, the motor #1 of the postcapitalist economy; whereas capital money, at least in Europe, is not the prime force of its culture." Kriesche added that FleshFactor's intention to create a debate between artists and scientists would be more relevant and productive as "a debate between the real players, the professionals of the flesh-, finance- and information industry to start with."

A contributor named "-j." [Michigan, USA] then made a call for common sense. In a long passionate statement, echoing the sentiments of previous reassuring contributions by Peter Charlot and Laura Vandenburgh, "-j." wrote:

"... I don't have the time nor the desire to worry about such lofty notions as 'non-anthropocentric cultural perceptions.' I worry about keeping my job. My health care. Enough food to eat ... And when I look backwards to the personal stories of human existence collected from various cultures and ages, regardless of this monitor in front of me and the advantages offered by temporarily existing as a voice in time-collapsed-space [the Internet], I am very, very, very much like the humans before me."

Paul D. Miller, A.K.A. Dj Spooky [New York, NY] responded to the conservative nature of "-j."'s text. "-j." had apparently defined humanness too narrowly. Miller responded: "There are

many ways of describing 'humanness'. The one that most are using on-line is derived from these previous migrations of meaning as inherited from the matrix of values we call 'Europe' ... But c'mon folks — a discourse about identity based solely on the last several centuries seems a bit shallow. I am no [techno] utopian. I don't see the Internet as the end all be all of late 20th century culture. But it is inarguably fostering new methods for viewing culture and strategies of 'existential' identity. I say 'strategies' of identity because identity is a process, a continuous engagement with change."

Phoebe Sengers [Pennsylvania, USA] contributed a personal anecdote, implying that humans were the weak link [physically] in the contemporary cyborgian reality. She wrote: "By December 1994 I had RSI [repetitive stress injury], tendinitis in my hands so badly that if I tried to squeeze your fingers, you would not have noticed." As she tried to continue her work at the keyboard her RSI then moved up into her elbows. She ditched the keyboard and moved to voice recognition software only to quickly lose her voice. Finally she concluded that the machine-driven rigour of her work was destroying her physically and she opted for more biologically friendly working conditions.

Steve Mann [Boston, USA] then contributed a text outlining his work as an engineer/ artist. He takes a "surveillance situationist" approach, resituating the surveillance camera in disturbing and disorienting contexts in order to challenge the preconceived notions of surveillance and power in our societies. He views media tools as weapons and encourages 'little brother' to arm himself. Mann naturally took exception to "-j."'s conservatism. "-j." had written about recent developments in lounge culture: "Synthetic poly and rubber slides out of style, replaced by stepping out in rugged wool tweed and shiny 100% silk. Some have even traded in keyboards and scratch tables for the alto-sax and string bass." To this Mann replied: "I'm thinking of a Harris tweed jacket, lined with a nice plastic hose intertwined throughout, in which the coolant flows, so that I no longer scorch my belly with the 133MHz 586 processors I currently have in my undergarments."

Rose Stasuk [Florida, USA] drew attention to her web work, The Body Internet. She wrote: "This is my body — an anthropomorphized synopsis of my art research and practice. Since the body is our vehicle for understanding the natural world ... it makes an equally good metaphor for exchange." Carmen Hermosillo [California, USA] responded: "My thinking about the body is undergoing a change. I think that we've been too interested in the meatbody aspects of the body and ignoring some of the other aspects. I think for example that looking at the electrical aspects of the body would be more rewarding in terms of creating a metaphor that one could actually DO something with ... It seems to me that there is a place where space theory gets really stalled, and that place appears to be that people do not seem to be able to divorce their thinking from the meatbody thing. Cspace is not an alternative meatbody. It is not an extension of nature in the sense that we have ordinarily been taught to think of nature. It exists apart from nature, eco-feminist ideology notwithstanding."

Jill Scott [Karlsruhe, Germany] then submitted a description of her latest work, Digital Body-Automata. Resonating with Rose Stasuk's use of the body as a means for organizing theory, Scott embodies theory in a series of interactive installations. She wrote: "[Digital Body-Automata] consists of three installations called: A figurative History [past mechanical transformation]; Interskin [present digital transformation] and Immortal Duality [future molecular transformation]. These installations are designed to encourage intimate and contemplative and interactive participation on the part of the viewer and center around a similar theme; the exploration of the desire to transform the human body by technology, and the effect technology may have on the design of the human body in the future.

Guillermo Gòmez-Peña, A.K.A. El Mexterminator [California, USA] then contributed a text outlining current debates about the body and new technologies and how these debates had polarized the experimental arts community and the performance art milieu. Peña wrote: "There are those in the 'machine art' movement who advocate the total disappearance of the human body and its replacement with computer or mechanical robotics; others believe that the body, though obsolete, can still remain in the center of the art event, but that new technology can equip it with prosthetic [perceptual and physical] extensions. A visceral reaction to these proposals can be found in the artists of "apocalypse culture" who have adopted a radical luddite stance: to reclaim the body primitive as a site for pleasure and pain, and "return" [so they claim] to a sort of neotribal paganism, very much in the western tradition of anarchist "dropout" culture. What Roberto and I are trying to do is explore a fourth option: to use new technologies as a means to enhance the interactivity between performers and live audiences [voyagers/tourists]; and to gather cultural, and political information of a very unique confessional nature, which will then be reinterpreted by and expressed through our "primitive," political and erotic bodies. What the live audience ends up experiencing is a sort of visualization of their own post-colonial demons and racist mirages."

Guillermo Cifuentes [New York, USA] then made reference to Carmen Hermosillo's statement on "the difficulties of leaving the meatbody behind." Cifuentes wrote: "That seems indeed to be both the limit and a central issue in this discussion. How, if at all, can we forget the meatbody? We seem to leap into metaphors and abstractions in order to ... preach to ourselves [about] the disappearance of our bodies. But when we turn around and attempt to think about who we become in this process we seem forced to return to the meatbody: as erotic, politic, even historic site. In a way, even while we are able to viably sustain a notion of 'subjectivity' which no longer resides -or at least not exclusively — in the body, the idea of 'self' — battered but ready to battle — seeks the meatbody as locus and limit ... At the same time, I am quite dumbstruck by the intensity with which metaphors acquire their own substance in these discussions [... 'natural' 'nature' 'organism' etc.]. Often it seems to me that we forget that whatever it is the shape and consistency our flesh is acquiring through this medium, it is strikingly linguistic in character. It could be argued that the technology is still developing and that the enhancement of audio and image real-time capabilities of the medium will rapidly render that point moot. Which in a way is true as digital technologies and the Net promise to become the total medium. But it still remains, as a residue in this process, the fact that we tend, quite strongly it seems to me, to turn ourselves into language: the keyboard, and not the screen, is the ultimate interface, the most dominant link in this technological line, at least thus far."

Ebon Fisher [New York, USA] then responded to Guillermo Gòmez-Peña's statement: "What [we're] trying to do is explore a fourth option: to use new technologies as a means to enhance the interactivity between performers and live audiences [vougers/tourists]. Fisher wrote: "That sounds very promising and valuable. How about a 5th option?, expanding the circle beyond just the techno/social: Foaming interspecies confluxes. Getting past not only the alienation of the individual, but the alienation of society/technology from the surrounding 'wilderness' [whatever THAT is]. Certain elements of the pagan/rave diaspora holds out that promise, although with a degree of wobbly confusion ... We experimented in a concerted attempt at 'emergent behaviour' from many technologies, art disciplines, and local fauna [slugs, mice, and microbes] precisely with a wiggling multimedia/multimodal/interspecies conflux in mind. 'Organism' was given birth in Williamsburg, Brooklyn in 1993 in an abandoned mustard factory, and we had a bewilderingly good time doing it. Over 2,000 people 'web jammed' all night and into the next morning." Fisher had previously informed FleshFactor of his Wigglism

Manifesto, a poetic vehicle for the propagation of an interspecies culture, generated by, and also a treatment of, a uniquely networked subjectivity.

Mark Weiser [California, USA] wrote: "Everything is mediated. Our bodies, our senses, our brains, our minds, all contribute to the mediation of everything. There is no increase of mediated experience. Experience has always been totally mediated." And he took issue with an earlier post by Carmen Hermosillo on simulation. Hermosillo had pointed out that our contemporary sense of nature was mediated by perceptual instincts and filters mediated by education, historical perspectives, painting, etc. Weiser wrote: "I agree with the mediation point, but why does that make it a simulation? In a simulation of rain, you don't get wet. But even in perceiving nature through the mediation of my sense[s], I do get wet. The distinction is of transpicience. Does the world shine through transpiciently, or is there another world being simulated?"

Richard Brown [London, England] then contributed a text on the role of mind, body and spirit in interactive art. Stressing that Duchamp had made art that had embodied mind and spirit, Brown wrote: "The FleshFactor debate intellectualises whereas a strong Interactive Art [IA] piece puts theory into practice. Via IA, I seek to question the conventions of virtual reality by challenging theoretical definitions of virtuality, mathematical and philosophical speculations on reality and in turn our uncertainty principle like relationship to a perceptual reality. Post-millennium IA should empower and enlighten [holistic spirit nature] ... I advocate a Duchampian Alchemy — the synthesis of dualities — where East meets West, Art meets Science, Mind accepts Body and Spirit resonates with Nature."

Patricia Smith Churchland [California, USA] then contributed the following text, apparently triggered by Guillermo Gòmez-Peña's reference to a "machine art" movement's advocation of the complete replacement of the body by intelligent robots. Churchland wrote: "At this stage, there is no serious possibility of humans managing without their bodies; in particular, without that part of the body that is the nervous system. And because the nervous system interconnects with the muscles, glands, gut, skin, tendons etc in extremely complicated ways, with feedforward AND feedback signals, there is at present no serious possibility of managing without arms and legs, eyes and ears, stomachs and livers, and so on. It is quite possible that the dynamic biological system [body + nervous system] that has evolved to allow us to manage on this planet is much more capable of dealing with matters in real time, and with greater precision, than manufactured [nonbiological] devices can ever be. Just as planes may fly faster and carry more folks than birds, birds can land in extremely delicate situations, reproduce, feed themselves, avoid collisions etc in ways that planes probably never will. Or at least it will not be worth the time, cost, and effort to get planes to do the complicated range of things that a pelican, for example, can do. So we may manufacture intelligent machines for limited purposes, but probably not for the whole range of complicated things that humans do: e.g. tending children ... So I wonder whether it is a bit too early in the game to worry too much about being replaced by manufactured brains. I am afraid I have a very practical bent, and I worry more about things we really need to know but don't yet know: e.g. how to predict, prevent, and successfully treat schizophrenia — and other diseases of the nervous systems, such as multiple sclerosis, Lou Gherig's disease, Alzheimer's, etc."

Dennis Wilcox [Darlinghurst, Australia] then wrote: The hyperstructure of the human body can be amplified through technology assuming that you can equate the figurative hyperstructure as something more than the cognitive slicing of the flesh [corporeal mind]. This I regard as a spatial/time problem. Unfortunately society is so heavily influenced by the two dimensional in cinematic abstract space, that a great deal of energy has been devoted

limiting the senses to the pinhole of the peripheral bromide! ... A device which I am currently developing can create a 360 degree volumetric [computer generated solid] in real time. By adapting the principals of creating a real time three dimensional [real volume] morphology, I believe I have found a way to amplify the fourth dimensional [the fourth dimension as space rather than time] hyperstructure of the human form...What results within the vortex of my display is a 'figurative hypersculpture' generated from a number of human movements. This is hoped to create a greater sense of hypervision, an appreciation of higher abstract space, and hopefully an evolution of vision beyond the imprisonment of the fallible senses and the cinematic gaze."

Mark Weiser [California, USA] then contributed a response to Laura Vandenburgh's earlier text. He wrote: "Laura Vandenburgh writes [of] 'escaping the constraints of biology through our integration with technology' ... Biology is a technology, a meat technology. A technology we don't understand very well, a technology that was not invented but discovered, like gravity, like using a rock as an axe, like flying. But we can no more escape biology through technology than we can escape death by committing suicide. ... Laura Vandenburgh also writes: 'Science and technology play a big role in our lives, drive a lot of change, and organize the way we perceive the world. Other ways of knowing aren't highly valued'...Too true. And yet science and technology as practised by scientists and technologists also make crucial use of other ways of knowing. Sandra Harding in her book on feminist science called 'Whose Science?' discusses the concept that 'physics' is a poor model of physics. By this she means that the concept of physics as reported in physics journals and by physicists themselves — the myth of physics — is in fact a very poor model of what physicists actually do, which involves intuition, bodily knowing, cultural and historically biased seeing, etc. Physics is required to ignore the sociology of physics. But if one wants to really know physics and the human frailties of the real work of physics, one cannot ask a physicist."

Carmen Hermosillo [California, USA] then submitted a text sympathetic of Guillermo Cifuentes and his references to Bataille and other pre-digital writers. Hermosillo, referring to Bataille's examination of Emily Brontë's main characters in "Wuthering Heights," writes: "[that Bataille felt Brontë's novel was] a huge tragedy of language categories, a tragedy that is recycled [today] every single time that some new person goes online, starts responding to chat or !ntalk or !talk or whatever, and starts the dialogue which to me has some of the ritualistic beauty of medieval chant litany or ritual catechism: who are you?/who are YOU?/are you real?/yes, are YOU? And so forth: until it has its peak in the mutual orgasm which in its highest and most highly physical and intimate and personal form occurs probably on the telephone. & this attempt to discern the meatbody behind the letters, is truly, as I tell you, the introibo ad Altare Dei of the late 20th century."

Peter Charlot [Hawa, USA], responding to Patricia Churchland's earlier statement, "I wonder whether it is a bit too early in the game to worry too much about being replaced by manufactured brains," wrote as follows. Charlot: "I don't think it is to early to worry. Please worry. Save us! You are one of the captains of the ship of brain research, don't let it be the Titanic.

[I tend to the histrionic.] Perhaps spread throughout the silicon soup of computer programmers, the pieces of the conscious machine have already arrived. These parts might link together without our direction at all, but by the same process of evolution that linked our human organs; only faster. This is the unwitting FleshFactor theory." He continued, obviously with a sense of humour: "If we allow fate to become the heart of a Machina artificio sapiens then we risk contending with minds that may refuse to take Turing tests, claiming such tests to

be machinist. The point is we won't be able to control what such machines will want to do. Some may want to play pool, or listen to music. But at some point these machines are going to want to acquire land, found churches, govern themselves and/or [ship's horn heard from out of the Atlantic ocean fog] govern us. Help!"

Diana Domingues [Rio Grande do Sul, Brazil] then wrote: "Concerning Richard Brown's FleshFactor message: I don't agree with some of what Richard wrote. [He referred to] 'The role of mind, body and spirit in interactive art'...and 'The body hosts the mind'...These are such classic statements...never again should we present the analytical paradigm that the whole is made simply by the addition of the parts. In the heart of a system, the quality of the parts and their tasks disappear when they are working ... We must never repeat the separation of body, mind and spirit. This is a definition from the mechanistic paradigm. We must delete this old classification from our discourse and only speak about the body ... Interactive Art is really humanizing technologies. To see, to touch, to sensually experience algorithms, infrared waves, to capture invisible forces giving them visibility, to check organic laws [that] give us many experiences of consciousness-propagation in a symbiosis of organic/inorganic life in this post-biological era ... [in the future] New biological interfaces will be facilitated as permanent prostheses are attached on us and into our bodies and thus we will be reinventing our lives and the ultimate nature of our species."

Derek Robinson [Toronto, Canada] then contributed a rich technical and poetic muse centering on the metaphysics and physics of interface design. Robinson wrote: "What distinguishes humans from primates is an 'embodied prehensility' which inhabits the entire voluntary body … Our highly developed voluntary control, a somatic abstraction of sorts, is the flip-side of high level symbolic thought which characterizes human consciousness. We apprehend the world tactually, kinesthetically, through cross-modal transfer, by manipulating internal models of our environment … Tools are materialized prehensilization. Ultimately the entire environment is prehensilized by consciousness. It becomes pregnant with incipient tool options, potentiating a vast array of possibilities in the world … A human being can inhabit a machine. The somatic percept, one's kinesthetic self-representation, is extensible. It can flow, proprioceptively, like a phantom nervous system, into the fabric of a machine, be it tool or vehicle. This is the point at which one says one has the 'feel' of it. The machine is permeable to the 'charge' of consciousness ... We are the ghost in the machine." Robinson concluded his muse with one of the most memorable quotes of the net-symposium, "Or what my daughter Rory said, age five: 'Everything I touch is skin.'"

Guillermo Cifuentes [New York, USA] then responded to Patricia Churchland's challenge to his statements about his flesh being rather linguistic in cspace. Churchland had written: "In what sense is my stomach linguistic? Or my tendons? Or my cortex? That I have names for them does not make them linguistic — does not make them a part of language in any obvious sense." Cifuentes responded: "Precisely my point.

As Carmen Hermosillo pointed out in her response, the search for the meatbody behind language is a primary impulse and part of the motor that drives us humans. Which is what Bataille knew: that when we reach, in the categories of language, the limit of the body and we transgress it [erotically in his case], lan-guage reverses, empties itself, falls apart. The flesh cannot be contained in the word flesh … we forget that language remains, in my opinion, the primary form of mediation with which we choose to manifest ourselves … In this regard, initially two things seemed to me to be crucial to remember: 1. Language is not neutral [ever], which seemingly many contributors in this forum don't want to think about [like when there is talk about some sort of liberated, free-floating subjectivity, or when 'identity' is discussed] and

2. [and here is where we agree] however versatile, lush, fleshy and juicy language is in cspace, it still amounts to a form of mediation and cannot, however hard we dream of it, finally, absolutely, irretrievably, efface the meatbody [subject to decay, but also, nostalgic me, capable of its own irreplaceable glories]."

Mark Weiser [California, USA], then responded to Peter Charlot's earlier call for help. Weiser wrote: "I sometimes feel about my teenage daughter the way Peter feels about machines. And the analogy is a deep one. Of course we will feel afraid as what we once thought we understood and could control moves into the world and it turns out we never did understand or control it at all. Anymore than we deeply understand and control our bodies or minds. But what is the "Help!?" Machines already want to acquire land, found churches, etc. Face it, Peter, you are a machine. And I look forward to meeting you."

Peter Charlot [Hawa, USA] then responded to Mark Weiser's earlier analogy about Weiser's teenage daughter and machines, that control is just an illusion. Charlot wrote: "What can I say, my daughter is two and I'm still into control and dominance! Sure I'm a machine and a territorial one at that. I'm hesitant to introduce a superior contender. Does anybody doubt that these silicon machines will, at some point, have the capability to usurp us? Is this where we want to go? Perhaps we have no choice...The reason we don't have conscious machines now is we haven't really defined our own intelligence and that is why such machines seem so remote. But it isn't far off at all ... It dawned on me one day, what if the hard part of designing the silicon machine was the cybernetic, and the easy part was the intelligence. What if the words running across our foreheads are the work of genetic algorithms? Perhaps they are algorithmic vowels that cooperate and compete to form speech through child-rearing feedback iterations. With appropriate memory in tow, random sounds [babbling] link together to form words, these are reinforced by the parents. In time, the sentences become more complex, even original. All the components of speech, such as grammar, develop on their own. A certain personality emerges, unpredicted and not programmed. A personality that is wholly dependent on the evolution and organization of these specific genetic algorithms [not to mention biological genetic influences]. Because these genetic algorithms are designed to sustain themselves, and speech is their ticket, then they will develop speech strategies to succeed. The winners will form a personality, a complex algorithmic ideosphere, which is analogous to the biosphere, being comprised of many contending but balanced idea-species. Some personalities will be kind, others cruel. Some will be average, some will be brilliant. There is no way of predicting."

Charlot continued: "Write a computer program to conform to the above conditions. At first, just like a child, the words will be disorganized, but in time, they will grow sophisticated and even original. In its world, the computer is totally devoid of any sense of the outside, but for you. I think you will find that you are enough. This is a primary system you can create on a home PC. You could devise a machine that includes three of these personalities that interact from separate perspectives. One that organizes sensory input, one that estimates through simulation the future and one that divides itself into influencing the others from two philosophical perspectives, the one [holistic] and the many [linear]. Let these interact through heuristic and autocatalytic processes. Once you've gone this far, add a few sensory components, a couple of wheels, and what have you got?...Help!"

Max More [California, USA] then contributed a text called Replacing the Body, responding to Patricia Churchland's assertion that there is no serious possibility of humans managing without their bodies, particularly the nervous system. More wrote: "Even though I do expect one day to become postbiological [assuming we discover how to extend life spans in the next

few decades] I agree that this won't happen anytime soon. I find the uploading scenario fascinating — mapping the brain's functions then re-embodying them in a faster nonbiological device. However, I see that as a far-off possibility. What I do think we'll see ... is the gradual augmentation of the biological brain with nonbiological components. The end result of this process might be the replacement of the natural brain with synthetic parts ... [while] this certainly is not 'managing without our bodies'. It does suggest that we will replace some biological parts, and augment their functions. I do think there is a serious possibility that we will replace our nervous systems with technological analogs [working faster with higher bandwidth]."

Max More goes on to speculate that Churchland's statement that the human biological system will continue to reign supreme in dealing with matters in real-time and with far greater precision than manufactured non-biological devices is shortsighted. More wrote: "Nature had no foresight and 'designed' us by accumulating small steps. Sometimes this led to design flaws [such as Dawkins pointed out about the eye in The Blind Watchmaker], and always used only the available materials. Vast amounts of work lie ahead to understand the brain and 'artificial' intelligences. Yet, we know that nerve impulses work in milliseconds rather than nanoseconds. Given enough time and better technologies, I find it hard to believe that we can't do better than nature."

More continued: "One reason that I don't worry too much about being replaced by manufactured brains [apart from the difficulty of making them] is because I think the us-and-them division will break down. Once we have understood and treated these neuropsychological problems, I hope we will become more inter ested in augmenting our cognitive and emotional functions. As computers get ever smaller and come with more intelligent interfaces, as we learn to couple brains to computers and information networks, we should see a deeper and tighter functional connection between human brains and [non-biological] machines."

With these excerpts from Max More's message, submitted to the FleshFactor net-symposium on June 3, 1997, I conclude this summary of the net-symposium to date. As I wrap up this summary of the first six weeks, contributions to the FleshFactor discussion continue to pour in. The nature of these messages continues to oscillate between broad philosophical issues [mind/body, biological/artificial natures, the differences and similarities between humans and the machines they create] and more concrete, although no less complex, ideas about language[s] and physical interfaces between people and the machines they have grown to depend on, love and fear.

In the FleshFactor net-symposium we bear witness to a collective, international muse on an evolving human nature at the raw edge of its relationship with digital technologies. In this relationship we see stress, exhilaration and profound evidence of who we are and where we have come from as a species. As inevitable, significant change becomes so very real with increasing speed, we naturally call upon our most fundamental beliefs for stability and security. The FleshFactor net-symposium, and hopefully the 'live' symposium to follow, has provided an intellectual space for us to think about the position, status and condition of the human being in a world dominated by digital network technologies. If there is one thing this net-symposium has demonstrated, it is that we will need to develop new points of view if we are going to be capable of recognizing changes in our human condition. To begin with, from the somewhat alien vantage point of post-human networks and vast fields of hyper-mediated memory, we may be first seen as, and thus called, the FleshFactor.

http://www.aec.at/fleshfactor