Instant Conductors

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Abstract

This essay discusses performer status in environments imbued with the artefacts underpinning millennial theatre history that today take on new forms as digital media invest live art. In keeping with a dichotomous conception of human beings as determined by or determinant of their surroundings, human-computer interaction raises questions of identity where individual perception-bound and shared experience is increasingly interwoven to form a new kind of sensorium. In conclusion, the author evokes challenges to notions of identifiable individuals posed by the 'generic humans' whose credence is steadily being reinforced by extraterrestrial activities.

Mine is no callous shell,
I have instant conductors all over me whether I pass or stop,

> They seize every object and lead it harmlessly through me.
> Walt Whitman, *Song of Myself,* 1855

Since we first became aware of our own hand and foot prints in the physical world, those original inscriptions that mark our corporeal passage through space and time, we humans have constantly sought new ways to symbolise our relationship to the universe. As awareness of our physical tracks has dawned on us, leading us to revere them as proof of our being, we have developed diverse ways of using objects to durably weave ourselves into our surroundings. Tools, instruments, and indeed all artefacts are heavily loaded cultural phenomena, which modify and bear witness to how we apprehend the world. Throughout his substantial opus, anthropologist André Leroi-Gourhan has described the complex parallel intertwining between the evolution of language and symbolic systems, and that of tools: as we learned to use stone, metals, then to manufacture implements and complex mechanical devices, our symbolic representations of life were invariably altered and enriched. Emerging mixed reality territories in turn offer rich cultural perspectives, offering inscribable surfaces for graphics testifying to our passage, but also inhabitable spaces where we can physically grapple with objects and forces, however virtual their implementation. How we experience and relate the body in space is powerfully transformed by digital media.

Creative use of tools, instruments and machines often occurs at the fertile fringe zones between the natural and the artificial, between living and inanimate phenomena, between humans and other autonomous evolving creatures. Theatres offer an ideal breeding ground for this activity: live actors and objects, flesh and shadows mingle to form an unnatural realm which has a nature of its own and breathes by its own laws, where humans are deified and energies are reified. Theatre's essence resides in 'hybrid intelligence networks'[1] that interlace chimeras, humans and machines. The meltdown of registers of presence and modes of communication occurring via biotechnologies, and the emergence of identities, gestures and metagestures through movements in/of living data spaces, demands theatres apt to stage the unfolding of new notions of space and time and to project languages that reconcile bodies and spectres, life-lines and codes, signals and

signs.

Whitman's 'instant conductors' might today translate as sensors and the porous body they link to outside objects, as the technically augmented body of the 21st century. Performing artists have constantly extended their expressive possibilities by using 'conductors' to amplify the production of sound, heighten visual impact, and enrich kinetic vocabulary.[2] Such devices appear as cumbersome forebears of the sensors that today discreetly invest and relay the body's innermost workings, yet all these accoutrements are designed to enhance the performer's communicative power, extending the impact of acquired techniques in areas such as voice projection, physical agility, facial and corporeal expression.

Modern sensors increasingly tend to highlight intimate, inimitable features, the surreptitious rhythms and indices that are our hallmarks as living organisms, whilst rendering these same proofs of individuality in universally codified terms as digital data and the multimodal displays this data can drive. They entrain a telescopic collision between scales: the uniquely personal transformed into code becomes part of an indiscriminately generic, eminently reproducible data base. The individual is thus spotlighted as vertiginously independently other, and simultaneously as an emblematic representative dependent on the rest of us. This has always been central to theatre born of and borne by the sacrificial actor who stands out from the milling crowd to build an affective bridge and serve as a cathartically useful affordance for that same crowd. By enabling identification with the singular, compared with or pitched against the many, the actor is a liberating channel for venting our torn yearnings as massified individuals.[3]

Autonomous/ heteronomous bodies and otherness
Two drawings made in 1924 by German artist, dancer and choreographer Oskar

Schlemmer, a key Bauhaus figure during the initial Weimar and subsequent Dessau periods[4], depict complementary conceptions of our relations to our surroundings. In *Figur und Raumlineatur*, the central static figure is enmeshed by a web of diagonal lines organised by a double-boxed frame that confers formal perspective space on the human figure. Schlemmer refers to this figure as being governed by the planimetric and stereometric relations proper to cubic space, mechanically and rationally determined. By contrast, in *Egozentrische Raumlineatur*, the central figure's gesture conveys dynamically expressive, expansionist motion that radiates a ripple-like flow of circular patterns into the surrounding space. Here, Schlemmer describes movements as emanating from within: invisible internal functions like cardiac, venous and respiratory rhythms, the brain and the nervous systems infuse a space that is organically determined and conditioned by sentiment.

Schlemmer's drawings resume our struggle to define relations to digitally wrought spaces. On the one hand, digital means are seen as positioning if not trapping us within grid-like spaces governed by the apparently inflexible abstract parameters of computation. On the other hand, digital affordances offer novel incursions into experiential spaces created by sensors which draw embodied and digitally-generated percepts into a single loop. In the first instance, the heteronomous individual is seen as subservient to and determined by external factors, and in the second, the autonomous individual is seen as shaper and definer of his or her surroundings (Becker 2003).

Interpreting links between embodied and computer-generated/computer-processed experience is a major task for artists exploring realms of local and global identity in information and communications networks. The sheer feasibility of technically connecting distant places gives rise to notions of universally meaningful communication which become simplistic when the noosphere is endowed with mystical status as guarantor of shared human understanding, deceptively screening the messy vitality and the vital messiness of difference (Norman 1996). The need to acknowledge otherness, idiosyncracies, and human expression that resists universalisation, whilst guaranteeing the conditions whereby they can be made communicable, is however not a problem

inherent to digital tools and networks. It pertains to a deep, ancient question of language and norms, of communications vehicles that ideally enable social dealings without flattening content into vapid near-nothingness. The need to acknowledge otherness and in parallel to promote the commonality that affords exchange is part of the permanent trade-off between mores that uphold cohesion of a community, and individual defiance that acts as a driving force and mutagen for that same community. These needs are evident in the opposition between standards designed to privilege interoperability, and exceptions that challenge those standards to accommodate change (Norman 2002).

According to one tenacious notion, digital tools designed to process real-time motion are seen to homogenise and flatten their subjects like steamrollers. Yet the extraordinary resilience of individual gestures and movements, and their ability to transcend what are ostensibly highly normative technical systems are frequently evidenced. For the author, this became dramatically obvious during a motion capture workshop in 1994 at the International Puppetry Institute in Charleville-Mézières, France.[5] Twenty participants from eleven countries performed an ice-breaker exercise which consisted of executing three trajectories in keeping with dynamics easily discernible for all present as 'normal', 'slow', and 'fast' (this exercise is a useful developing agent in the photochemical sense, revealing individual locomotor schemata, letting participants weigh each other up to identify potential collaborators or people to steer clear of). Patent differences in terms of speed and amplitude were instantly evident. At the risk of veering on caricature, these were partly imputable to geocultural origins: a Lebanese participant used subtle hand and torso movements to accentuate rhythmic nuances, while a Dutch participant prosaically walked, plodded then raced across the test area. An American was asked to repeat the 'slow' trajectory until a sequence adjudged acceptably slow by his peers had, for him, become an act of tortured near-immobility. Differences also depended on performance backgrounds: rod, glove, string and body-mask puppeteers invested the arena quite distinctively. Last but by no means least, differences were attributable to individual morphologies and movement patterns.

The avowedly ingenuous goal in Charleville-Mézières was to give puppeteers from the Institute's well-networked international community an opportunity to experiment with

motion capture equipment, which ten years ago was – and to a large extent remains – expensive and hard to access. It was a modest attempt to come to grips with corporeal expressivity in digital spaces, deemed necessary in the context of rhetoric-driven cyberphobia and cyber-euphoria; in the latter instance, the computer-mediated global village is seen as egalitarian thanks to naively surmised technical unity, (mistakenly) considered as combining agency with cultural neutrality.

While implications of the knotty ethical and anthropological questions that arose at the Puppetry Institute were barely foreseen or grasped during the workshop, they fired a longer-term need to explore the expressive strengths of otherness in the normative environments afforded by digital media.[6] In these environments, where communication and calibration are often synonymous, it seems all the more essential to promote creative endeavour that delves into rather than glosses over gritty boundaries of difference and is apt to strengthen our capacity for dialogue, thus our platforms for creative exchange (an imperative formulated by Bernard Stiegler during one of the seminars that tempered workshop practice). Questions of idiosyncracy and commonality mirror questions of the local and the global, albeit in a slightly skewed fashion, and both sets of questions seem to be encapsulated by Schlemmer's counterpoint figures.

CMC: Computer-Mediated Communication/Colonisation?

'Such computer-mediated colonization further appears to resolve into the intractable choice between a colonized and thus homogeneous McWorld or the violence and fragmentation of Jihad that seeks to preserve local identity. The apparently optimistic and benign intentions of those who believe wiring the world will inevitably issue in greater democracy and prosperity tragically work as an ideology for a praxis that threatens to homogenize the globe's peoples and cultures in the image of Western CMC proponents: the reality underneath the smiley face of an electronic global village, in short, is the Borg' (Ess 2000).

Ess's vigorous countering of assumptions that technologies are value-neutral because they are 'only tools' resonates with theories developed by Leroi-Gourhan, Gilbert Simondon (1958) and Bernard Stiegler (1994-2001). It articulates thinking increasingly voiced by artist programmers alerting software users to the shaping force of values systems embedded in computer-mediated communications. Artist collective Mongrel emphasises how software constructs ways of sensing, knowing and doing in the world: UNIX command line interfaces transpose the operating system 'memory' onto the user, elements of HTML documents are discerned as more or less important for crawlers, search engines incorporate semantic judgements, memory spatialisation is reinforced by the WIMP (Windows, Icon, Mouse, Pointer), etc.[7] Mongrel's efforts to propose alternatives which go beyond the 'farce of repurposing' (i.e. 'putting software at the service of the community') are at work in Linker, a multimedia editing tool designed to optimise creative appropriation by novices.

The same uncompromising, hands-on questioning that subtends Linker led in June 2005 to Skint Stream, a collective project by ICA Cape Town, Mongrel, and Radioqualia, which drew together artists from Jamaica, Johannesburg, London, Southend, and Toronto in a series of streamed open mike sessions. Skint Stream resolved to 'connect audiences and cultural spaces previously separated by economic, geographic and political factors (…) to start a conversation between spaces separated by different types of distance.' This conversation is framed by questions to which champions of seamlessly networked ubiquity remain strangely deaf: 'what different cultural spaces do individual sounds come from? What is cultural remoteness in an electronically networked world? Can we still think of ourselves as being in margins or centres when digital technologies allow us to bridge distances and make our own connections?'[8]

Encounters which convey the haunting foreignness of remote cultures or psycho-geographies to fire the collective imagination are rare. Effort to reconcile critical reflection about globalisation with our growing mobility underpinned a recent event entitled 'Capturing the Moving Mind: Management and Movement in the Era of Permanently Temporary War.' Goals of this itinerant conference-workshop held on the Trans-Siberian express in September 2005 were: 'To move without cause, to organise

without ends, to flee the war against intellect.'[9] Several dozen activists, artists, mobile communication experts, filmmakers, musicians, and researchers travelled in a train which, according to Brett Neilson, 'functioned as a kind of protective shell, like the set of a reality TV show, removing the participants from the world that flitted by outside' and opening them up to potential criticism as 'intellectuals, activists, and artists, predominantly white and English-speaking, speeding past impoverished towns, disputing the finer points of immaterial labour while aestheticizing the crumbled factories on the way' (Neilson 2005).

The conference-journey sought to identify insidious new forms of global control that outstrip everyday borders and fences, tragedies and bombings, a 'new and seemingly pure power that functions without institutional legitimation (that) seems to change day by day. (…) When power becomes detached from any single logic or rationale, all that remains is to stay on the move, to meet its madness with a delirious rigour that shifts, twists and compulsively derails (…) The journey was a kind of learning without pedagogy, an exercise in improvisation as much as organisation, a passionate encounter where relations by hand, touch, and intuition outweighed those that occurred on the cusp of understanding.' Neilson describes 'new vistas of intimacy' opened up by essential activities like buying food at stations, achievable by gesture only: 'Obsessed with the movement of the economy from the limited sphere of rationality to in-born and adaptive human faculties, the discussion constantly veered back to these chance encounters. Perhaps because this accidental ethnography - more than the internal group dynamic - registered how the purity of experience is always contaminated by contingency and context.' (Neilson 2005). Whereas other writings about the Trans-Siberian event contain explicit references to theatre[10], Neilson's words map uncannily onto the discourse of distributed performance, pointing to experiential terrain performers might share with others striving to 'flee the war against intellect', from which they/we might learn, and compared with which they/we might seek (or not) to affirm the specificity of a critically embodied epistemology.

Undertakings like this contrast with the plethora of projects which, for all their bombastic agendas, are token nods to exotica, multimedia travelogues about sophisticated cultural tourism and forays into strange lands or even outer space enabled by the latest technologies.[11] If we were Martians, we might view the nomads-on-the-web trend as a touching human tribute to canine leg-raising, creating data trails to let web-sniffer packs follow our movements. Vapid glocalising and blogorrhea are no doubt foreseeable pandemics in times of exacerbated physical and virtual mobility: like the noosphere mystics mentioned earlier, who hazily, lazily confuse planetary hyperconnection potential per se with overblown claims of enhanced communication, self-publication possibilities seem to sometimes deprive us of critical distance or, worse, the desire to maintain such distance as we move from 'bookmark the universe' to 'edit yourself' mania. Yet surely a distinction must be made between applauding increased access to digital communications tools, and insisting on the creative interest of all they convey? Discernment appears all the more warranted in that the massive proliferation of online presence which IS crucially part of our connected world, DOES inspire remarkable work – from Kazuhiko Hachiya's *Mega Diary* (1995)[12] to Harwood's *NetMonster* (2005)[13]. Proliferation and profusion need not equate with the demise of critical thinking or of creative interpretation – that vital hermeneutic activity which pushes back mental boundaries and acts as a mutagen of the collective imagination.

Charles Ess propounds a 'middle ground that conjoins both local cultural values and communicative preferences (in a thick culture) with a global communication facility (in a thin culture). *Philosophically*, the turn to soft determinism means that if we remain interested in an electronic global village - one that moves beyond a Borg-like McWorld to one that preserves distinctive cultural values and communication preferences - we must turn from the naïve (and imperialistic) focus on the technologies alone to their *social context of use*.' (Ess 2000). This approach opens up the path to Computer Mediated Communication instead of CM Colonisation.

Perceptive Supplanting, Crossover and Inter Dis-Communication

Shared exploration of perceptive and sensorial spaces offered by digital means in order to develop skills and affordances apt to specifically supplant (extend/ augment) our capacity to evolve within these spaces opens up valuable terrain if we wish to use them for more than the production of ersatz experience and idle simulacra. Certain areas of ongoing research challenge notions of individual integrity in ways that resonate with our seethingly hybrid networks and distributed online activities, where ephemeral phenomena like synchronisation and spatiotemporal correlations may stand as the sole and potent milestones of novel aesthetic experience.

Neurological research initiated in the sixties by Paul Bach-y-Rita demonstrated the human brain's plasticity and the central nervous system's capacity for adaptation through functional reorganisation (Bach-y-Rita 1972).[14] Experiments with sensory substitution systems for the blind, which confirmed that vision is governed by cerebral rather than ocular functions, showed the brain to be capable of developing an entirely new sensory system if so required. Whereas substitute sensor arrays have become banal (TV cameras for the blind, accelerometers for subjects with vestibular deficit, microphones for the deaf, etc), the brain-machine interface raises complex issues, and attempts to identify organisational dynamics that get beyond mechanistic models have prompted investigation of human experience in varied contexts, notably to try to ascertain the role of shared memory and perception in the forging and operation of our sensorium.

Charles Lenay et al work in a field designated sensory or perceptive 'supplanting' or 'supplementation' (*suppléance*) rather than substitution, conveying a notion of augmented or superseded, rather than merely replaced, functionality (Lenay, 2003). This requires a caveat made explicit by Lenay's team: the belief that prostheses can restore sensory experience comparable to unaided sensory experience is vain, as these devices occupy small, discrete parts of the richly multisensory bandwidth that accommodates our normal doings. Although subjects with sensory disorders establish existential integrity in keeping with available means, usually optimised through adaptive reorganisation, this factor is often eclipsed by overbearing notions of 'sensory deficits' and equally mechanistic notions of compensatory prosthetics. The resultant devices, which are often cumbersome as well as being bereft of the emotional values that colour natural sense

activity, upset experiential integrity and are thus frequently rejected for psychological and social reasons that outweigh their technical advantages. Supplanting in this context means developing tools and environments to elicit additional affordances within specific human-machine – or rather human-machine-human - configurations. Instead of focussing on brain activity or technical devices per se, Lenay's holistic, phenomenological approach to subject coupling and interaction with the environment echoes the complex heteronomous/autonomous dichotomy resumed by Schlemmer's drawings: 'Meaning is not merely information to be captured; it is also to be constructed, either by internal interaction with other sensory dimensions and feelings of pleasure and pain, or by external interaction with other subjects' (Lenay: undated online text).

Lenay's investigation of sensory behaviours in social environments has led to the term 'perceptive cross-over' (*croisement perceptif*), denoting exchange between subjects that is apt to yield new degrees of mutual recognition and spatial positioning, thence communication and affective engagement. Rather than on individual situations in environments read as sensorily impoverished, focus is on socially interactive situations and perceptive sharing to favour the development of mutually determined identities and investigation strategies (Lenay: Cerisy paper).[15] Experiments involving blind subjects with tactile styli have allowed spatial and temporal paths ('perceptive trajectories') to be monitored in joint exploration mode, showing the spontaneous onset of behaviours geared to mutualise and thereby heighten perceptive activity.

According to Lenay: 'Perceptive invariants bear meaning linked to the existence of a history and a collective memory, which supposedly emerge from the play of interactions of several subjects in a given milieu. If I act in a given way on a given object of my perception, I provoke a reaction in another person acting on this same object. When the play of interactions becomes stabilised around objects or behaviours, each subject can anticipate the effects of his/her actions which in turn depend on the perceptions and interpretations of others. Under these conditions, a subject is able to recognise what, for another subject, exists in the same way as it exists for him or herself. There is collective construction of a common objectivity and shared memory. Modifications to shared space should thus give rise to meaning, as actions undertaken by certain subjects will make

sense to others observing those actions' (Lenay: undated online text). Lenay's work to create the conditions of perceptive interaction in shared virtual space is producing provocative concepts like 'the perception barrier' (akin to the sound barrier, beyond which an activity is too fast to be objectified by repetition or reversibility), perceptive correlation, distal caresses, and shared timing translated as synchronisation/desynchronisation/ rephasing and dephasing (Lenay: Cerisy paper).

Perceptive cross-over and the interactive, interdependent discovery of sensory space are the subject of the 'Inter Dis-Communication Machine', an artwork created by Kazuhuko Hachiya and exhibited at Arts Electronica, Linz, in 1996.[16] The two sets of equipment which make up the machine, to be invested by two subjects at any one time, are each comprised of a head-mounted display with two monitors and a video camera showing the other person's view relayed by radio waves, and a backpack containing a battery, TV tuner and transmitter. Each of the backpacks is adorned with a set of black or white wings concealing a TV antenna. By donning this apparatus to put themselves in each other's viewing mode, decoupled from their respective physical bodies, the paired subjects are obliged in order to move to embark on mutually dependent exploratory activity reversing most usual oculomotor reflexes. Whereas Stratton's glasses required individual adaptation to an optically unusual situation[17], the force of the Inter Dis-Communication Machine resides in its social appeal to shared vision and investigation. Hachiya does not presuppose or impose angelic behaviours, but one quickly learns that even mischief and trickery in this inextricably harnessed environment require prior negotiation of codes and rules.

Body Area Networks and Crankable Laptops

Distributed human-computer systems manifest intricate sociotechnical and systemic features that are made still more complex by wetware advances. Technozoosemiotics, a field of research into communications systems of hybrid technical and organic worlds, charted with premonitory insight by zoosystematician Louis Bec[18], is taking on new importance with the advent of BANs (body area networks). Apt to supplant certain LANs (local area networks), BANs use the body as a natural conductive resource or, put more

prosaically, as a networking cable. In February 2006, the Korea Advanced Institute of Science and Technology presented a chip implanted in a subject's forearm to function as an audio signal transmission wire linked to an iPod.[19] Because it is impractical to wire together all the devices that people carry around with them, and because Bluetooth connections are moreover subject to interference, harnessing of the body's conductive properties is explored through a wideband signalling chip that 'augments' an iPod nano. Along the lines of thin client servers which mutualise resources to optimise task distribution, one can imagine people coalescing spontaneously or forcibly to benefit from more bandwidth, like our prehistoric ancestors who huddled together to keep warm. While the peculiar energies and volitional processes arising from networked human-computer systems have triggered much cultural theory and artistic experimentation in recent years[20], BAN-borne podcasts and manets (acronym for Mobile Ad hoc Networks) are ushering in novel social challenges.

Parallel to BAN developments, a project that might paradoxically serve as a foil to wetware revamps of our experiential range is the imminent delivery of millions of crankable portable computers to children living in parts of the world devoid of electricity. The 'One Laptop per Child' initiative launched by MIT leader Nicolas Negroponte plans to distribute approximately 150 million $100 windup-powered, Linux-based, government-purchased laptops to children in Brazil, China, Thailand, Egypt and South Africa in the course of the next year.[21] The laptop, a prototype of which was unveiled at the November 2005 Tunis World Summit on the Information Society, serves as computer, electronic book, games machine and television set, and its dual display is usable in full-colour or black-and-white sunlight readable mode. In some homes this crankable laptop will be the brightest source of night light. Applications will include country-specific software; systems will be Wi-Fi- and cell phone-enabled, with USB ports and built-in mesh networking functionalities.

In parallel, the Indian company Novatium intends to offer stripped-down home computers for $70 and Microsoft is calling for a move toward $100 PCs for developing nations. It is impossible to foresee the impact of such initiatives because their sheer scale makes them incomparable with bygone hype – e.g. the assumption that computer

instruments would make everybody an artist. Which online games will the hundreds of millions of previously forgotten children be playing? Will the open source ethos hold out under WTO pressure, and how will ownership of a laptop shape notions of physical, let alone intellectual property amongst children who have next to nothing (for whom reliable water networks may be a more pressing need than ICT networks)?[22] How will this massive re-reading of software culture change the political economy governing the digital world? Will 'One Laptop per Child' give rise to a mesh-networked generation of creative hackers, or just a few more million run-of-the-mill consumers? What will be the meaning of local and global, of cultural remoteness for those suddenly enabled to make their own connections and create their own centres?

East – West – Cosmos is Best

Critical discourse that dwells on east-west type oppositions is problematic for millions of people born in the South Pacific, on land colonised by Anglo-Saxons and marked by ostensibly western culture, yet for whom Asia lies to the west and the United States to the east. Beyond this geographical polemic, though, in an attempt to redefine scope and terms of the debate on local and global, individual and collective identities, we might do well to recognise the emergence in past decades of a generic race of cosmic humans. Today there are notions of 'universal' cultural references on the rise that, for the first time in history, seem to hold some kind of validity. Perhaps one way for us to better identify the irreducible individuality, idiosyncratic gestures and behaviours of performing bodies in our connected world, is to note the counter-example of humans who consider themselves as representatives not just of particular ethnic or cultural groups, but of the entire species.[23]

Although all earthlings have so far been born and bred in social and geographical contexts that are as determinant and culturally overwritten as our own, cosmonauts and space explorers fulfill their missions in the name of humankind. At a European Space Agency meeting in Noordwijk, Holland in November 2005[24], Reinhold Ewald, a physicist who participated in several MIR expeditions, described his experience of long

duration space flights. Ewald considered himself immensely privileged (his understudies had to make do with the mere dream of leaving earth), and at the same time immensely responsible and accountable, as representative of the human race left down on the blue planet contemplated from giddying heights. The role of cosmonauts as servants to humanity rather than heroic individuals is essential to their psychic balance: Ewald was able to sleep in space only because this was part of his job, whereas he would have found sleep impossible without the profound conviction of serving others, i.e. a cause much greater than himself.

Humankind's growing ability to identify with extraterrestrial adventures was evidenced by a whimsical mission undertaken in February 2006 by International Space Station crew members Valery Tokarev and Bill McArthur. Because living space is ironically at a premium in the infinite expanses of outer space, voluminous objects no longer useful to ISS operations are discarded if possible, to burn up as they re-enter the Earth's atmosphere. Space suits are especially cumbersome and prone to obsolescence because of protective fibre upgrades, which have hugely extended the range of extra-vehicular activities undertaken by cosmonauts. Like other distinctive apparel displayed in historic collections, space suits also retain a fantomatic force as symbols of their previous wearers. Probably for all these reasons, an unneeded Orlan[25] spacesuit baptised 'SuitSat-1' (RadioSkaf or Radio Sputnik in Russian) was sponsored by volunteers from the international ARISS working group (Amateur Radio on the International Space Station), and fitted with sensors to monitor temperature and duration of its activity, together with a battery-driven transmitter to send recorded messages in six languages to enthusiasts (mostly school groups around the world) operating in the VHF or 2-meter part of the amateur radio band.

NASA footage shows a unique ritual where the suit, complete with helmet and gloves, is jettisoned by flight engineer Tokarev into solitary orbit 220 miles above the South Pacific Ocean (the suit is farewelled with Tokarev's 'Goodbye Mister Smith')[265].The pirouetting figure is reminiscent of Kubrick's *2001: A Space Odyssey* (1968) where the computer Hal murderously cuts loose a crew member engaged in extravehicular work, to send him drifting to his graceful cosmic death. But just as moving as images of SuitSat-1's last

recorded dance are the fragments of children's voices heard responding to the orbiting figure. It is hard to imagine what such a vision might convey for the children of the children of the children entranced by Armstrong's wondrous moonwalk in 1969. The poignance of this eery 'Ghost in the Shell'[27], imbued with residues of human presence and the ardour of dreams, puts it on a par with the totems, puppets and automata that traverse our anthropomorphilic history. With its instant conductors transmitting multilingual messages and vital signs, SuitSat-1 is perhaps the long-awaited harbinger of a truly universal human identity, at once viscerally familiar and formidably other.

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Notes

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[1] This expression features in the title of an article by infometrics specialist William Turner (1994).

[2] The buccal amplifier, cothurns (high sandals) and onkos (top-knot added to aggrandise the mask) of Greek tragedy, glories and chariots of baroque theatre, flying wires and pointe shoes of Romantic stages, and electrified costumes used since the 19th century are some such 'conductors' in Western theatre history.

[3] Leading on from Richard Wagner's *The Art-Work of the Future* (1849) describing the artist's gift of self to society, and Friedrich Nietzsche's account of the individual actor's emergence in *The Birth of Tragedy* (1872), Jerzy Grotowski (1968) stands as a remarkable recent proponent of the sacrificial actor.

[4] For an iconographic overview of Schlemmer's activity, see Karin v. Maur (1982) *Oskar Schlemmer*, Munich: Prestel-Verlag. Contextual insights into Schlemmer's work can be found in Tut Schlemmer (ed.) (1972) *The Letters and Diaries of Oskar Schlemmer*, Middletown, Connecticut: Wesleyan University Press. See also S.J.Norman (2001) "Corps/ espaces interactifs", in *Oskar Schlemmer, L'homme et la figure d'art*, Paris: Centre national de la danse, pp.152-164, and (1995) "Schlemmer's Aesthetics and Digital Body Technologies", in *Quarterly InterCommunication*, Tokyo, N°11, winter, pp.59-62

[5] Participants in the workshop organised by the author came from Argentina, Australia, Austria, Brazil, France, Germany, Holland, Lebanon, Poland, United Kingdom and United States. A description is provided in Norman (1995b).

[6] This exploration has underpinned the author's involvement in several practical experiments which have focussed on gestural differences pertaining to specific artistic skills and techniques, rather than on explicitly intercultural issues.

[7] These elements are specified by Mongrel at the Linker website: http://www.linker.org.uk/Linker/back.html

[8] Text from the Skint Stream website: www.jelliedeel.org/skintstream

[9] Neilson (2005). The author of the present paper is grateful to Ned Rossiter for providing additional information and photographs of the journey.

[10] 'And perhaps this is all about theatre. A theatre of the future. There is something artificial here, something constructed, composed and organized, something performative, out of which a recomposition perhaps becomes possible: a recreation, an enrichment of the world (like enriched uranium), a proliferation of not just forms but of the modalities of being.' http://www.ephemeraweb.org/conference/ (Introductory paper).

[11] See Valery Grancher, whose 13-day (!) sojourn in 2005 in the Amazonian forest in the home of the Shiwiar Indians conveys a jaded stance that resurges from another era of colonies and empires: 'Aided by modern technologies – satellite, wifi, computers, etc (…) in a region particularly hard to access and physically very trying, Grancher established direct links and exchanges which could be followed up each day, on the artist's Blog.' http://www.theshiwiarsproject.org/

[12] The artist recounts a dream of a library made of the diaries of everyone who has ever lived; his random reading of elements written by people of all ages, kinds and nationalities, living or dead, prompted *Mega Diary*, where 100 people kept diaries for 100 days and exchanged them on networks, revealing the diversity of everyday lives and the power of monologue.
http://www.aec.at/en/archives/festival_archive/festival_catalogs/festival_artikel.asp?iProjectID=8487

[13] '"NetMonster" is designed to generate, edit and continuously update a composite image made up out of the results of internet searches guided by various keywords. It allows people to collaboratively build up a composite 'networked image' out of the images, text and addresses returned. The "NetMonster" will continuously rebuild itself based on users edits and changing search parameters, offering up new content and configurations.' http://www.mongrel.org.uk/projects

[14] Sensory substitution history and techniques are reviewed in the doctoral thesis in cognitive psychology by Malika Auvray (2004) *Immersion et perception spatiale*, Paris, Ecole des hautes etudes en sciences sociales, available at http://www.nstu.net/malika-auvray/publications/Malika-Auvray-These.pdf

[15] These notions were put forward by Lenay in his paper "Croisements perceptifs et spatialisation des points de vue", at the Colloque de Cerisy organised by Bernard Stiegler and Georges Collins (2004), entitled *La lutte pour l'organisation du sensible: comment repenser l'esthétique?* Proceedings in press.

[16] http://www.aec.at/en/archives/prix_archive/prix_projekt.asp?iProjectID=11264
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[17] Reference is to the experiment reported by George Stratton in 1896, who adapted after several days to eyeglasses that completely inverted his visual field.

[18] Bec (1997). Note that in addition to Bec's interest in squids as a marine biologist, he also uses the word as an acronym to designate 'Superconducting Quantum Interference Devices'.

[19] Online news items on this project include http://www.engadget.com/2006/02/10/new-ipod-nano-uses-human-skin-to-transmit-audio/

[20] Doruff (2005) provides an overview of a diverse range of LiveArt Exchange practices organised by Waag Society between January 2003 and January 2005. Lovink (2002) has edited a series of dialogues with spokespersons representing 'the Virtual Intelligentsia'.

[21] http://laptop.media.mit.edu/

[22] The fact that people in developing countries often lack water is a point frequently overlooked by technology developers but eloquently made by Olu Oguibe (1996).

[23] Cf. Norman (2002b).

[24] The author was kindly invited to the "Workshop on Cultural Utilisation of the International Space Station" by The Arts Catalyst (www.artscatalyst.org).

[25] Designed and manufactured by the Russian company Zvezda OKB, Orlan space suits have been used for Extra-Vehicular Activity on Salyut, Mir, and the International Space Station. An Orlan suit consists of flexible limbs attached to a one-piece rigid body/helmet unit. The suit is entered through a hatch in the rear of the torso, life support equipment being housed in the exterior of the hatch. Electrical power and communications operate via an umbilical cord to the station, and the suit is controlled via a panel on the chest, which the cosmonaut views using a wrist mirror.

26 Masmune Shirow's 1995 manga cult film with this title, inspired by Arthur Koestler's *The Ghost in the Machine*, finishes with the heroine, Major Motoko Kusanagi, saying: 'I wonder where I'll go now. The net is vast and infinite.'

27 http://www.aj3u.com/suitsat/video.php

All websites consulted on March 30th 2006. Translations of French quotations are by the author