

Northumbria Research Link

Citation: Jones, Steve (2010) The technologies of isolation: apocalypse and self in Kurosawa Kiyoshi's Kairo. *Japanese Studies*, 30 (2). pp. 185-198. ISSN 1037-1397

Published by: Taylor & Francis

URL: <http://dx.doi.org/10.1080/10371397.2010.497577>
<<http://dx.doi.org/10.1080/10371397.2010.497577>>

This version was downloaded from Northumbria Research Link:
<http://nrl.northumbria.ac.uk/9131/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>

This document may differ from the final, published version of the research and has been made available online in accordance with publisher policies. To read and/or cite from the published version of the research, please visit the publisher's website (a subscription may be required.)

www.northumbria.ac.uk/nrl



The Technologies of Isolation:

Apocalypse and Self in Kurosawa Kiyoshi's *Kairo*

Steve Jones, Northumbria University, UK

Abstract

In this investigation of the Japanese film *Kairo*, I contemplate how the horrors present in the film relate to the issue of self, by examining a number of interlocking motifs. These include thematic foci on disease and technology which are more intimately and inwardly focused than the film's conclusion first appears to suggest. The true horror here, I argue, is ontological: centred on the self and its divorcing from the exterior world, especially founded in an increased use of and reliance on communicative technologies. I contend that these concerns are manifested in *Kairo* by presenting the spread of technology as disease-like, infecting the city and the individuals who are isolated and imprisoned by their urban environment. Finally, I investigate the meanings of the apocalypse, expounding how it may be read as hopeful for the future rather than indicative of failure or doom.

The boom in Japanese Horror over the last decade¹ has had a profound impact on the genre internationally, not least in terms of inspiring remakes and adaptations across the globe.² One film that has not garnered as much critical attention as its significant brethren *Ringu* (1998, Japan, Nakata Hideo) and *Ju'on* (2002, Japan, Shimizu Takashi) is *Kairo* (aka *Pulse*, 2001, Japan, Kurosawa Kiyoshi). This is true both of the original and its US remake (2006, USA, Jim Sonzero).³ It is to Kurosawa's sombre chiller that I turn my attention. The plot revolves around a group of young Tokyo residents and their interactions with a website that invites them to 'meet a ghost'. Their contact with the website leads to a string of suicides and disappearances, which mysteriously fuse individuals with the cityscape. All that remains of the vanishing victims are black smudges. The scale of these disappearances and deaths escalates to epidemic proportion, leading to devastation and desolation. I will investigate

This is an electronic version of an article published in *Japanese Studies*, Volume 30, Issue 2, 2010, pp.185-198.

DOI: 10.1080/10371397.2010.497577. *Japanese Studies* is available online at:

<http://www.tandfonline.com/doi/abs/10.1080/10371397.2010.497577>

This PDF version © Steve Jones, 2012

Travis Crawford's assertion that *Kairo* 'survey[s] the cataclysmic effect that technology and the desensitisation of modern life can have on the populace of Japan'⁴ by debating the role of technology in the urban setting, as well as the ways in which the narrative chronicles the relationship between technology and the solipsism or social dysfunction of its central protagonists.

I will begin by investigating the balance struck between technology and humanity – the ever-dissolving line between organic and mechanistic – that underlies *Kairo*. This leads me to discuss technology as a form of contagion that further blurs the line between the biological and computational in its representation as a kind of viral incursion. My interest is in how *Kairo* brings a future of impending disaster into its here and now (2001) by depicting a fledgling Internet culture as the conduit for humanity's inevitable decline. Moreover, *Kairo* ties such concerns into the concrete of the city, making the self part of the environment of steel and industry that is subsequently destroyed. I will investigate the implications of the urban setting and milieu before considering how social relations are depicted. In particular, I will focus on the isolated/isolating nature of the self and how communicative technologies are brought under scrutiny here. Finally, I conclude by re-visiting the apocalypse motif, dissecting whether the decline of *Kairo*'s universe is necessarily as bleak as it might first appear to be.

DigitAlone: Technology and Identity

Technology is implicated in the survival of *Kairo*'s protagonists, primarily because it fails when they most rely on it. When Harue shoots herself, Kawashima's mobile phone fails, meaning he is unable to call an ambulance to save her, while Michi's car also fails because it is 'out of gas'. Yet the fear at hand is not directly one of a future without technology per se, or even that technology will inevitably fail humanity. The terror is of being so immersed in technology that it becomes inseparable from the self. The dreadfulness of technology is made palpable by the website that appears to infect the protagonists. Devastation may be

incited by technological means, but it is actually a slippage into the self: people are so lonely, they disappear, becoming nothing more than black smudges on concrete. I will investigate both urban space and internalisation in more depth as we continue. For the time being, it is crucial to note that the holocaust with which *Kairo* concludes is destined to decimate society and city alike, but it begins on a personal level.

In order to get to the heart of the problem *Kairo* poses, we must first understand how technology and the self are interwoven. The paradigm of human versus machine is founded on a cyclic battleground of three concerns: self and body, body and technology, technology and self. The self is exhibited through the body yet, as Sheila Kunkle remarks, 'in "real life" there is always a gap between the real of the body and reality of the body, between the biological flesh and our orientation to its existence'.⁵ In *Kairo*, that split is substantiated via ghosts and the slippage of individuals away from the body into the environment. Technology can certainly become part of the body, as evinced by medical and prosthetic technologies,⁶ not to mention the body-art of STELARC.⁷ Some theorists have asserted that the body itself, being founded on electrical nerve impulses, is already somewhat machine-like, and Daniel C. Dennett further suggests that 'human consciousness' can be likened 'to a "virtual machine", a sort of evolved (and evolving) computer program'.⁸

Kairo's ghosts epitomise this dynamic. They are not 'Bodies without Organs' that refuse technocratic control:⁹ they are manifested in cyberspace, and cause humans to physically vanish. Kawashima is shocked that he can touch one of the spirits, who declares 'I am real'. Moreover, when he encounters a ghost in the arcade, the camera point of view matches Kawashima's eyeline so that we perceive the spirit as pixellated and blurred. Thus, the signifiers of an online visual aesthetic infect the exterior offline world, horrifically breaking down the barrier between the two states. The phantoms are strangely as physical as the humans and seem to have mastered a merging of technological and exterior corporeal presence. They represent a version of progress that concurs with the notion of

transhumanism . . . a teleological view of human progress which views technology as the vehicle, not just for the improvement . . . of humanity, but for the transcendence of the kind of limitation that non-transhumanists would consider to be an inevitable part of the human condition . . . [including] death.¹⁰

The undercurrent of this prospect is that humans will be superseded by technological advances; that is, left behind as part of a lower evolutionary order.¹¹ This fear partially arises from our recognition that we cannot both utilise technological advances and remain unaffected by this progression.¹² Technology is formulated as apart from (rather than a part of) human selfhood so as to assert the distance between human/organic and cyborg/mechanical, creator and creation, and so forth. The more we utilise technology to expand beyond the means of the anatomical self, the more we fear technology is somehow intruding upon the self. This is revealed via *Kairo's* cyber-spirits, an explicit source of trepidation. Technology would not exist without the self and we would not be able to surmount the limitations of body-self to the extent that we do without technology. Our fear is of technology growing beyond its dependence on the human creator into its own sentient selfhood, then wishing to rid itself of humanity in order to attain dominance.

While fiction that hinges on human-machine inter-relationships commonly leads to conclusions that re-establish human control over technology,¹³ *Kairo* sustains the threat posed by technology. In doing so, Kurosawa contemplates the horrors of this combination and human subordination to the technological. We create and labour in favour of technology, working towards technological evolution, all the while becoming more reliant on technology to facilitate our biological development.¹⁴ So, technology now has become inextricable from our selfhood in this view, and is certainly paralleling, if not intertwined with, our imagined future potential.

As *Kairo* would have it, the implications of this shift are straightforward, but terrifying. In the film, Yoshizaki theorises that 'no matter how simple the device, once the system is

This is an electronic version of an article published in *Japanese Studies*, Volume 30, Issue 2, 2010, pp.185-198.

DOI: 10.1080/10371397.2010.497577. *Japanese Studies* is available online at:

<http://www.tandfonline.com/doi/abs/10.1080/10371397.2010.497577>

This PDF version © Steve Jones, 2012

complete, it'll function on its own, and become permanent. In other words, the passage is now open'. This 'passage' bridges the gap between the living and the spirit world, and its conduit is the Internet. *Kairo's* horrors imply that our 'progress' is such that there is no turning back, and that technology, being inextricable from the self, will come to lay claim to its own selfhood. Indeed, Bukatman pronounces that '[i]t has become increasingly difficult to separate the human from the technological . . . electronic technology seems to rise, unbidden, to pose a set of crucial ontological questions regarding the status and power of the human'.¹⁵ Such power is notably undermined by Kawashima's computer, for example, which dials up its own Internet connection unprompted in order to display the Forbidden Room site.

The autonomy of technology even informs the mise-en-scene. Our viewpoint often pans jerkily, as if filmed through a web-cam, and is subject to digital interference. Moreover, the movement of these shots anticipates the motion of the protagonist, as if technology itself is pre-determining the action. In the scene where Harue finds she is 'not alone', we see Harue moving towards a spirit from the ghost's point of view. This perspective is made available to us via a computer monitor, consolidating the connection between ghost and technology. The monitor-image dominates the sequence and frequently distorts, connoting that technological mediation fragments space. Given that this vantage point is aligned with the menace of the spectre, it is clear that cyber-social contortions of space are to be feared. Our exterior view of Harue frames her from behind, implying our disconnection from her. Without the monitor, we can 'see' that she is headed towards nothing. Both Harue and the space she inhabits become imperilled by the invisible danger, even if the threat is not externally obvious. It is not made clear whether the ghosts of *Kairo* are human spirits that utilise technology, or if the machines themselves have developed onscreen human-shaped spectres. Both of these possibilities imply the mechanisation of consciousness without material dependence. This sequence uses camera position to illustrate that dynamic.

This is an electronic version of an article published in *Japanese Studies*, Volume 30, Issue 2, 2010, pp.185-198.

DOI: 10.1080/10371397.2010.497577. *Japanese Studies* is available online at:

<http://www.tandfonline.com/doi/abs/10.1080/10371397.2010.497577>

This PDF version © Steve Jones, 2012

One further question *Kairo* poses is not about humanising technology or the propensity of technology to dehumanise,¹⁶ but what happens if our amalgamation with technology is so exact that both we and it cease to exist.¹⁷ Kurosawa riffs on this by allowing free exchange between self and technology whereby the flow of spirit and the surge of electricity are indistinguishable. Even though the majority of human protagonists escape their bodies, they remain entrapped within themselves. Before we explore the problems posed by internalisation and solipsism, let us delve further into the biological, investigating how the film's techno-virus spreads to eradicate the populace.

MachInfection: Technology and Disease

Inasmuch as technology belongs to us, our relationship with it may appear to be parasitic – we use it and discard it when it no longer suits our needs.¹⁸ Technology is oblivious to our utilisation of it for our own ends. The opposing fear – that technology will come to attain autonomy – is manifested in numerous J-Horror texts by depicting technology as infectious. Hence Ringu's video-chain contagion, telephonic contamination in *End Call* (2008, Japan, Yamamoto Kiyoshi) and *One Missed Call* (2003, Japan, Miike Takashi), and the incursion of metal into the skin of *Tetsuo: The Iron Man's* protagonists that leads to a 'world of rust' (1989, Japan, Tsukamoto Shinya). In all of these texts, technology afflicts because it has attained a form of autonomy. Interestingly, the same is true for popular conceptions of the virus as somehow intentional.¹⁹ Here the machinic and viral meet as threats that bridge the gap between the biological and the inorganic, threatening precisely because of that combination.

Kairo's flow of energy seems to be akin to something highly recognisable to a technological society: a computer virus. This familiarity makes the threat all the more plausible. The narrative's fatal metaphysical virus passes from static object (the computer) to organic presence (user). The virus, such as it is, marks humanity as its ultimate destination-target,

blurring the biological/machinic boundary even further. Steven F. Kruger treats such a parallel with great vigour, discussing how the rhetorics of HIV and computer viruses correlate. He states that 'the biological metaphor works especially to portray the computer virus as a disease entity – "infectious" and "spreading", causing "symptoms", demanding a "cure", even posing "apocalyptic threat"'.²⁰ Such an analysis lends real gravity to Jean Baudrillard's prophetic vision that parasitic technology will lead to 'the end of the body, the end of history'.²¹ Indeed, in *Kairo*, Kawashima conceives of death itself as a disease that can be cured. He wants 'to live forever' and hopes '[medical technology will] find a cure'. Yet, while he optimistically considers technology to be a saviour, the narrative trajectory towards apocalypse is closer to Baudrillard's pessimism. The fate of the populace here is worse than death, being the same lugubrious obsolescence faced by superseded technology, and the dead-but-forgotten. Moreover, the human self is not the only subject of infection here: the film form too suffers from Internet dial-up interference sound effects.²²

While it is clear that the protagonists are let down by technology – be it 'out of order' ticket and vending machines, cars breaking down, inoperable telephones, the abandoned hospital or factory – technology's capacity to infect requires delineation. Where some theorists have argued that the content of media technology is a kind of viral pollution,²³ I am interested in how technology itself becomes a kind of conduit for disease. In *Kairo*, all that is delivered is the invitation, 'would you like to meet a ghost?'. Thus, it is through interaction with technology that humans are contaminated. The contagion then is one of communication between worlds: between the living and the dead, the organic and the machinic, the virtual and the physical. While I will address these concerns more fully later, we must pause here to survey the implications of this reciprocation. If the onset of infection requires participation, the contamination metaphor becomes even more apt. The virus is allotted the illusion of agency, but in actuality it is without intent. While narratives such as *Ringu* and *One Missed Call* are driven by malicious ghosts – meaning that a form of humanity bears the weight of evil, rather than non-sentient machines – *Kairo* is ambiguous. Terror takes the form of an anthropomorphised, social, and denaturalised/inorganic phantom. But quite how the

presence of these spirits will harm the living is unclear. Harue theorises that the ghosts will not kill them as that would only create more spectres. Instead, they will try to make the humans 'immortal' by entrapping people in their own 'loneliness'. While the narrative appears to have destruction at its heart, then, it boasts no perpetrators (or perpetration) per se, and is really concerned with extending, not ending, human existence. Moreover, the humans are ultimately subject to introspective decline. Fear is propagated by technology in *Kairo*, but it is coupled with the longing for contact, not a desire for annihilation. Yet, the technological spirits clearly signal dread. Kurosawa frequently uses sound to unsettle the audience, and alert us to their presence. Low bass rumbles and non-diegetic high pitched screams or singing are used for this purpose, the distance between the frequencies symbolising the emotional distances between the protagonists. Static loops accompany the presence of apparitions, consolidating the association of these spectres, technology and terror. The ghosts' cries of 'help me' are subject to exaggerated digital distortion when conducted via the telephone. Frequently, dead silence signals the presence of spirits, creating tension by 'killing' background noise, and evacuating the filmscape of even the sound of air movement. When Michi confronts a black smudge, we are placed 'within' the spirit both visually (we see from its perspective), and aurally. Background noise is again closed off, and the whispers of 'help me' are panned hard left and right to bring them closer to the viewer's position. Moreover, when Michi leaves, the camera moves to display the black smudge. Even though we are distanced from what seemed to be the physical locus of the spirit, the whisper volume increases. The ghost perspective continues to infect our viewpoint, implying that even though Michi has left the presence of the smudge, the affect of the spirit will also follow her.

Kairo's non-literal self-destructive virus is hosted by bodies that vanish, a city that is destroyed, and the Internet. The latter is carried through cities by wires, which are akin to metal veins that pervade the environment. The virus evolves beyond the limitations of physicality, becoming imbued with an agency of metaphysical proportion. The spirits' ability to traverse body and city as energy may imply a future re-invention of the body that

This is an electronic version of an article published in *Japanese Studies*, Volume 30, Issue 2, 2010, pp.185-198.

DOI: 10.1080/10371397.2010.497577. *Japanese Studies* is available online at:

<http://www.tandfonline.com/doi/abs/10.1080/10371397.2010.497577>

This PDF version © Steve Jones, 2012

intertwines spirit, city and computer. Yet it is in the fusion between the city and the infected body that we witness the profound unsettling of social interactions, and the revelation that there are no lives untouched by technology.

The relationship between technology and humanity in *Kairo* situates the self as caught between boundaries:²⁴ between internalised/externalised and existent/non-existent. The apocalypse seeks to de- and re-construct the world, thus making it both non/existent. *Kairo* navigates the disrupted perimeters between city, building and body. Technology and body become interchangeable, extending self-margins into the architectural environment that parallels the body.

TechniCity – The Urban Environment and Decline

The environment embodies *Kairo's* thematic concerns in the sense that it is expressly urban and technologically informed, and the infected protagonists become one with the city. Technology is a cipher for infection of people and place in *Kairo*. Technology is fused into the concrete of the city, not least since the heady population-capacity of Japan is bolstered by techno-architectural ability (namely, the vertical-space impetus).²⁵ Perhaps the concerns of selfhood are increased by Japan's over-population, meaning its city-spaces are representative of urbanity in extremis. Post-industrial technology equally signals an exacerbation of the urban milieu. Historically, cities have been framed as sites of medical and moral disease that threaten the social order,²⁶ thus consolidating concerns over infection that we have already raised. The city has also been accused of fostering mental unrest, paranoia and fear.²⁷ This aspect of the urban mindset is directly identified in Yabe's vision of normality: 'maybe [Taguchi] just suddenly wanted to die. I get like that sometimes'. *Kairo's* extreme yet generalised vision of what it is to dwell in the city then considers the urban environment to be a kind of 'fatal trap'.²⁸

This is an electronic version of an article published in *Japanese Studies*, Volume 30, Issue 2, 2010, pp.185-198.

DOI: 10.1080/10371397.2010.497577. *Japanese Studies* is available online at:

<http://www.tandfonline.com/doi/abs/10.1080/10371397.2010.497577>

This PDF version © Steve Jones, 2012

Kurosawa consistently frames *Kairo's* protagonists as imprisoned by their environment for precisely this reason. In the cafe, library, and hospital, walled spaces and long shots contain the characters, rendering the spaces as constantly limited and limiting. When both Michi and Yabe individually travel to Taguchi's apartment, the composition isolates them on the bus, accentuating the palpable pressure of being surrounded by no-one. Michi, for instance, is framed both from an establishing distance to illustrate her solitude, and (then) in medium close-up to highlight the claustrophobia of that space. On leaving the bus, long shots delineate the desolation of the city. Kurosawa then uses the stair-rails leading up to Taguchi's apartment to visually imprison her behind bars. A similar effect is achieved as Michi and Kawashima later search for Harue in the factory, or when Kawashima returns to the ruined computer lab. The steel, concrete and wires of the city clutter the shots, limiting our view of the characters. Even Harue's dead body is framed by railings, seeming to close her off from the rest of the scene. This sense of entrapment increases towards the film's climax where, for example, we are distanced from Kawashima and Michi's interactions because they are so often closed off within their car. At one point, our view of them is obscured by a reflection of the factory looming heavily between us and them. When driving through the city, they are dwarfed by the high walls of buildings that line the shots, while the fatality of the city-trap is evinced by the few dead bodies strewn in the streets.

The City has been vilified historically due to its propensity to bring large numbers of people into close proximity.²⁹ Such a concern should be at the forefront of the Japanese consciousness since it is one of the most densely populated countries in the world.³⁰ However, *Kairo* reverses this dynamic, creating its eerie register by ensuring virtually all its locations are abandoned, including the shop from which Michi obtains groceries, the bus on which Michi and later Yabe travel to visit Taguchi, and the train and station via which Harue and Kawashima attempt to 'escape'. The suicide Michi witnesses brings a small audience, but the streets are otherwise desolate. This is true from the outset, yet it is not until 80 minutes into the film that Harue asks 'where did everyone go?'. In doing so, she draws our attention to the fact that, in this narrative universe, there was never an 'everyone' to

This is an electronic version of an article published in *Japanese Studies*, Volume 30, Issue 2, 2010, pp.185-198.

DOI: 10.1080/10371397.2010.497577. *Japanese Studies* is available online at:

<http://www.tandfonline.com/doi/abs/10.1080/10371397.2010.497577>

This PDF version © Steve Jones, 2012

disappear. In contrast, it is the invisible 'spirit realm' that has reached 'critical mass'. According to Yoshizaki's hypothesis, it has a 'finite capacity', and has 'to overflow somehow'. The spectre of Japan's missing population is thus rendered in keeping with the apparent malevolence of the phantoms, haunting the environment.

I will return to the issue of desolation in the next section when investigating solipsism. Of immediate interest is again how the technological environment reflects urban barrenness. Japan's densely populated cities tend to be noisy environments.³¹ Therefore, as Kawashima sits in an amusement arcade, the bustling sound may fool us (and him) into believing he is surrounded. However, a distanced shot reveals Kawashima is alone. The environment is busied only by the sound of the arcade machines: that is, technology itself. It is only architectural and electronic technology that testifies to the presence of others, usurping social contact. Furthermore, that trope becomes a threat, as the camera tracks Yabe's journey to the Forbidden Room both by moving with him and by tracing him from on high as if the city itself is watching his movements, stalking him from a distance. This surveillance aesthetic means the city takes on the same malevolent autonomy that cyberspace does in the narrative.

Kairo's urban and technological starkness reaches a crescendo as the Suzuki Shipyard building is demolished to the sound of Internet dial-up interference, intimately connecting the shadow of communicative technology with the decline of urban space. Because *Kairo's* city is abandoned from the outset, it is technology and the concrete of the environment that fall into ruin rather than the populace. We witness the decline of just a small number of protagonists, and it is only via Kawashima's chancing on a televisual 'missing persons' report that we attain any sense of the scale on which human loss is occurring. Kawashima needs the technological to confirm what is occurring around him. Technology again correlates the fates of the city and its inhabitants in this instance. The same is true of the characters' absorption into the concrete that constitutes the city. Personal decline is implicated in the buildings themselves as a form of technological creation. The smudges that represent

vanished individuals are further- more reminiscent of shadows of people cast on the landscape during the nuclear attacks on Japan,³² many of which still haunt the environment like violent graffiti. While Gargi Bhattacharyya asserts that 'cities, as places organised . . . to meet a hungry multitude of bodily needs, are an unhappy reminder of how vulnerable we are to biological imperatives',³³ here the self is not so limited by corporeal substance.

The apocalypse collapses the boundaries between online/offline, virtual/tangible, flesh/concrete. Finally in this section, then, we must make reference to the role of non-physical space as a counterpoint to the city environment. As Jenny Wolmark observes, '[t]he metaphor of cyberspace . . . arises from a sense of spatial and temporal dislocation, but additionally it is focused on bodily dislocation, and serves to remind us that embodiment becomes more complex and more diffuse, as disembodied on-line existence becomes increasingly common'.³⁴ As the phantoms of *Kairo* evince, the spirit-self is not limited by the body, and can come to inhabit a conceptual cyberspace. Yet, this should not imply that technology can be utilised to re-invent the self beyond physicality. To reduce the self to this extent is to ignore the inherent fear of abandoning the body. The non-bodily neo-humanity reinvented through this new order of techno-selfhood is a site of terror and dis(-)ease in *Kairo*, not peace. The 'malevolence' of the spirits suggests that such transformation is beyond the capacities of the living. It also implies that connectivity across divisions leads only to increased remoteness.

SolipsiStatic: Individual Focus and Communicative Interference

If Kurosawa aims to critique contemporary metropolitan Japan, he does so in accordance with wider theoretical concerns regarding urban dissatisfaction. Urban living fosters fear, and results in a general desire to reduce social contact,³⁵ and this is the declaration of discontent that *Kairo* posits. For example, the perpetual alienation attested by the black smudges' whispers of 'help me' forever delineates the auto-abjection that has enslaved

them. The irony of regret rings clear as they become imprisoned by the concrete that embodied their fear of disaffection in the first instance. The cry 'help me' continually yearns for contact with others, yet also proclaims the anxiety of alienation that instigated the individual's projection away from the world into the morbidly self-obsessed ghost realm. It is vital that there is no distinction between the body-smudge that replaces the human and the literal writing of 'help me' on the walls of Harue's room. Because they are banished to 'Forbidden Rooms' that are sealed with red tape, both the victims and the spaces they inhabit are socially forsaken. That the Internet acts as a cipher for interaction with these withheld spirits exacerbates this irony. It not only incites the curiosity of the living individual through the very technological instance that facilitates the ghosts' alienation, but also spreads the contagion of loneliness through contact with these prohibited environments.

In *Kairo*, urban and technological estrangement is both personalised and characterised by the rhetoric of illness. The red tape sealing off portals resonates with the marking of contaminated houses during the Black Death in the fourteenth century,³⁶ again evoking social devolution in the context of disease. The sociality of infection is stressed, if only through the inherent causal properties of contagion. Yet while humans attempt to locate and close down affected areas, this desire is contradicted by the omnipresence of the spirits in cyberspace and the semi-presence of the immobile black smudges. Here, discontent becomes somewhat more akin to psychosis, for as Kunkle notes 'it is the psychotic who cannot fix his coordinates of space, time and matter . . . he [sic] is unable to establish a concept of a bounded self, much less form relationships with others'.³⁷ This is precisely the horror faced by the individuals in *Kairo*. Kurosawa frequently uses camera position to illustrate this sense of isolation, framing characters alone and rarely making use of close-up, other than to occasionally accentuate the claustrophobia of the spaces inhabited. The protagonists are commonly positioned with their back to camera, connoting their social alienation. This technique also creates tension for the viewer by frustrating our ability to identify with or fully ascertain characters' emotional responses and facial expressions. Like the ghostly presence in the film, the camera is frequently static or slowly glides, aligning the

film's aesthetic with the haunting atemporality of the spirits. When hand-held camera is utilised, it signifies rare instances of panic, accentuating the slow, creeping emptiness that characterises the majority of the film. *Kairo* particularly distinguishes its individuals by vacating the environment of crowds, and this makes their anonymity as shadowy every-victims all the more pertinent. The Internet too is represented as a place of invisibility for humans, that at once confirms the existence of the self, but also diverts it away from the locus of the body.

The technologies that are embroiled with disease are primarily communicative in intent; spirits manifest via television, telephone, and Internet. It is not that the technologies themselves transform as such – it is the populace's understanding of what those technologies signify that requires re-orientation. These technologies do not just permit social interaction (however problematically): they are defined and situated according to their social value. Our modern technological-communicative ability gives us little excuse not to communicate, which can be a burden as much as a blessing. We are slaves not to technology, but to sociality on a much grander level than previously possible. This social pressure is evident in Kawashima's motivation to invest in cyberspace not just to 'connect with other people' as Harue suggests, but because 'everyone else is into it'. Kawashima is pressured into this interaction then by an unidentifiable community. We certainly do not get the impression that Kawashima has friends to communicate with, not least as he is later willing to forsake the outside world to live only with Harue.

In parallel, Michi watches the news story of a 'fourth grader' sending a message in a bottle that travelled ten years and 4000km before being discovered. This tale is indicative of communicative difficulty and isolation, evoking the cliché of the stranded desert island castaway. The bottled message is certainly non-technological, but symbolises the anti-technological when the story is halted by interference, which removes half the newscaster's face. The bottle is clearly inferior to technological modes as a form of communication, being discovered only by fluke, and according to the report, its sender never expected it to be

found. However, the message is hailed as a miracle, and this undermines the significance of technological progress that allows us to communicate across the globe, including television broadcasting. Such advances are treated as mundane in comparison, being part of our everyday experience. This news story also reveals how much weight we place on communication; that is, how emotionally important it is to us. Yet this aspect is paradoxically subverted by the miscommunication the bottle signifies, having no identifiable audience in mind. The anonymity of this archaic mode is thus not far removed from the invisibility of instantaneous online interactions. It is for this reason that Harue deems 'people don't really connect', via the Internet or otherwise, even if the bottle story frames communication as somehow inevitable and futile. Again Kurosawa employs camera movement to reflect these themes in both the television report sequence, and the subsequent scene in which Kawashima retreats from his computer, declaring it to be 'stupid' because it has scared him. Michi turns off the news report in panic, then the camera remains with the television set as she backs away. Our view is aligned with the technological apparatus, and away from her. Only when she is suitably distanced does the camera flip behind Michi, and this maximises our disconnection from her.

Harue too declares that society is constructed around individuals that are always already isolated; that we maintain the facade of sociality while remaining profoundly 'alone'. The absence of families in *Kairo* exacerbates this concern. The forging of human bonds is negated by the exchange between Kawashima and Michi regarding Harue, to whom he was previously so devoted:

Kawashima: Friends? [I had] Maybe one, I guess

Michi: What was she like?

Kawashima: What? I don't really know . . . I never really found out

Michi: Where is she?

Kawashima: Somewhere

Kurosawa critiques the consequences of technological communicative advances by making social contact superficial, untenable and unlocatable. This is made clear via the status

allotted to physical contact in *Kairo*. The manifesto of asexuality here perfectly encapsulates both the social decline and avoidance of intimacy that Kurosawa associates with communicative technologies. Physical amity is limited to simple expressions of minimalist contact such as Kawashima leaning his head on Michi's shoulder after witnessing Harue's suicide. Bodily desires for contact (sexual or otherwise) have been sterilised, or are overridden by the non-physical system of mental intercourse represented by the 'collectivity' of the net. A longing for interaction is born within the film between Harue and Kawashima, but their separation occurs before they can physically unite. Harue especially longs for contact (harmony with an exterior presence), and yet when Kawashima offers this willingly, she rejects it. Instead she embraces the invisible entity in her apartment and surrenders to self-punishment. The temptation of the technological – the haunted website – therefore leads to her suicide. Of course, Kawashima also fails as our focal point. This is foreshadowed by the movements of the camera and Kawashima through the ruined computer lab. Both are drawn to a monitor until its image comes to dominate our view. The footage depicts a phantom's looped movement across a room, each time partially vanishing mid-journey. Like the ghost-image, Kawashima is doomed to disappear, and the structure of distantiating inevitably repeats.

Proximity is presented as a central problem for the protagonists. Michi's boss warns her to not follow Yabe because 'words of friendship' invariably hurt both parties. Accordingly, just as Junko vanishes after Michi hugs her, Yabe disappears when Michi fails to heed her boss's warning. Harue runs from the train after Kawashima assures her that he is 'beside her', that they 'are there together'. Separation is the consequence of Michi and Kawashima's contact in the car. Closeness leads to severance for all of the characters, just as it does when humans come into contact with spectres. Harue is thus correct in asserting that 'ghosts and people are the same whether they're dead or alive'. Her hypothesis that 'you might be all alone after death too . . . nothing changes after death, just right now, forever' is affirmed by a phantom that declares to Kawashima 'Forever death was eternal loneliness'. This

This is an electronic version of an article published in *Japanese Studies*, Volume 30, Issue 2, 2010, pp.185-198.

DOI: 10.1080/10371397.2010.497577. *Japanese Studies* is available online at:

<http://www.tandfonline.com/doi/abs/10.1080/10371397.2010.497577>

This PDF version © Steve Jones, 2012

fractured sentence and awkward tense structure epitomises the characters' inability to articulate given cyberspace's complex negotiation of temporal and geographical distances.

The characters' movements are foreshadowed by the computer program that is described as a 'miniature model of our world'. The dots that inhabit the screen predict the characters' actions: 'if two dots get too close, they die, but if they get too far apart, they're drawn closer'. Thus, the computer program mechanises the process of friendship in advance, and this overarching technological control is consolidated by the bringing together of Harue and Kawashima via computer lessons. Even while they discuss the program, Kawashima and Harue are distanced. Kurosawa's focus-pulling technique during this sequence adds to their separation, leaving one of the duo blurred and ghost-like at any given moment. Later, when they discuss the program, the camera mimics the connection/separation motif by allowing them to occupy the same frame only for an instant before one moves out of shot. The camera has to reposition either to include them both, or cut across separate framings to imbricate the two sides of their discussion. Furthermore, while it seems clear that Kawashima and Harue are destined to connect, Kawashima and Michi (who are unaware of each other for the majority of the film) drift towards each other, neither knowing 'what [they are] doing here'. Not only does their wandering motion transpose the computer-program dots' movement into the topography of Japan's cityscape, but the characters coalesce over Michi's inoperative car: to wit, another technological failure. The simulated movement of dots/fragments/molecules microcosmically denotes the distance of self from other in life at the most base of levels, and this is confirmed ironically by the declaration that 'only the creator' of the program 'understands it'.

The majority of *Kairo's* characters collapse into themselves as a retreat from social contact. The self is the battleground on which the body is forsaken. The protagonists are thus akin to separate computers that form a network, whereby the collective consciousness absorbs the individual, requesting their complicity to the meta-structure in which they are lost. However, the decimation of the self is only made possible by confirmation that there is a

self to be destroyed, even if the instance of evincing selfhood seems to result in its eradication.

ApocalypSelf: 'The End'?

Kairo, as I have demonstrated, envisages communicative technology as indicative of wider social problems of disconnection. This is why prolonged intimacy and physical contact are impossibilities for the film's protagonists. Technology becomes part of the selfhood of its user, an extension defined by Marquard Smith and Joanna Morra as "The prosthetic impulse". . . [which] is composed of any encounter . . . that facilitates or contests our chances of making (human) contact with a modern world that is ever more mediated and determined by communication technologies, biomedicine and information'.³⁸ The idiom of Horror clearly indicates that this is a critique rather than an observational commentary. Ghosts are employed because they evoke fear. They are unknown, and the motivation for their existence is unclear.

Mental-spiritual conflict with the machine is inflicted on the individual personally, and this appears to be the narrative's primary concern. Yet this clash is equally exacted upon the environment, extending from the protagonist's body. *Kairo* depicts an internalised collusion with carnage, forming a totality of annihilation which projects and implodes with equal velocity. But this only serves to further emphasise the individual as locus of terror, rather than dissipating the self in favour of the mass aura of threat. The origin and battleground of terror – be it technological or spiritual – is the self. Selfhood is at once located in/by the crisis as much as it is simultaneously devastated by that catastrophe. Balshaw and Kennedy observe that '[s]ome theorists argue that place is being erased by the spatial experiences of late capitalism – the simulacral, the hyperreal, the depthless'.³⁹ *Kairo* posits that body and city are inescapable factors, even if spirits can move from the body into the city. People are not erased here. The residue of self remains as a smudge, and longs eternally for 'help'.

Finally then, ghosts may be employed to highlight the shifts that technologisation heralds, which will not only affect our bodies, but ultimately our spiritual or mental existence as well.⁴⁰ *Kairo* critiques the dynamic and ever-evolving relationships between human, machine and environment, lucidly illustrating the evisceration of socialised identity through the cataclysmic transformation of the cityscape and breakdown of body integrity.

While some critics have read contemporary Japanese Horror as bleak or nihilistic,⁴¹ in the case of *Kairo* the emphasis on dystopia is somewhat unfair. Kurosawa himself declared that his apocalypse is intended to offer 'the beginning of hope',⁴² sharing Sharrett's concern over the 'very popular misuse of apocalypse not as revelation but doomsday, disaster, the end'.⁴³ Such a balance of oppositions is central to critical views of the role technology plays in our lives, and whether it will lead to utopia or our extinction.⁴⁴ *Kairo* may share the latter view of technological potential, especially as here material desire and disease are central to what technology has become. However, it does not necessarily doom the human race to extinction, as the film leaves Michi alive with her 'last friend on earth', and certainly no longer 'alone'.

In fact, *Kairo*'s scepticism is predominantly assigned to Harue, who opposes Michi's will to make connections with people, despite her boss's warnings. Harue's negativity is also balanced by Kawashima; when she declares 'I've got to go back . . . this is the end of the line', he responds 'That's not true. [The train will] start moving again'. Even when Michi asks Kawashima if he wants to 'go back to what is left of Harue' after she dies, Kawashima maintains his forward focus. He replies, 'no, let's go as far as we can', and later asserts 'this is the last stop . . . I can kind of see the future'. For this pairing then, apocalypse is both an end and a beginning. The concepts of technology and progress are intertwined,⁴⁵ yet *Kairo* undermines that connection, bringing the possibility of change into the hands of the human survivors. Michi's 'last friend' is the male sailor, one implication being that reproduction and repopulation are still possible, even if it is beyond the narrative's thematic or aesthetic capacity to permit their physical union. It is for this reason that she is framed with her back

to him. Interestingly, even Harue's pessimism and suicide are problematised by her coming into contact with a ghost, but not by falling into eternal loneliness. She shoots herself, but in doing so, she effects her own transformation rather than assigning herself to the immobility of morbid collapse, unlike Kawashima. Her escape is at least indicative of a potential for change, unlike the stasis of her peers who remain smudges on the landscape.

The city and technology cannot contain the vision of selfhood Kurosawa has in mind, and this results in a holocaust. The destruction of self and city is rendered in unmistakably nuclear terms; the goal of this techno-evolution then is the eradication of the old, permitting this new level of being to become normalised rather than anomalous. The film may be set in an identifiable locale (Japan), but it is significantly evacuated of history. The drive for Michi is forward, just as it is for Kawashima until the final scene. For all of the other protagonists bar Harue, the focus is on stasis, not regression. The apocalypse here is a wake-up call to those who are willing to stay permanently ensconced in a state of immobility. The current mode of being must be razed in order to make way for organic evolution. It is for this reason that the rigid concrete of the city is laid to waste, while Michi escapes into the vast, fluid ocean. Far from being the end, the narrative cessation finally signals that Michi is 'not alone'.

References

Alcabes, Philip, *Dread: How Fear and Fantasy Have Fueled Epidemics from the Black Death to the Avian Flu*. New York: PublicAffairs, 2009.

Balsamo, Anne, 'Forms of Technological Embodiment', in Andrew Blaikie et al., eds, *The Body: Critical Concepts in Sociology – Volume 5: 'Alternative' Bodies*. London: Routledge, 2004, 53–75.

This is an electronic version of an article published in *Japanese Studies*, Volume 30, Issue 2, 2010, pp.185-198.

DOI: 10.1080/10371397.2010.497577. *Japanese Studies* is available online at:

<http://www.tandfonline.com/doi/abs/10.1080/10371397.2010.497577>

This PDF version © Steve Jones, 2012

Balshaw, Maria and Liam Kennedy 'Introduction', in Maria Balshaw and Liam Kennedy, eds, *Urban Space and Representation*. London: Pluto Press, 2000, 1–21.

Baudrillard, Jean, *The Transparency of Evil*, trans. James Benedict. London: Verso, 1993.

Berriman, Ian, 'Rising Sun', *SFX Horror Special* (2004): 68–75.

Bhattacharyya, Gargi, 'Metropolis of the Midlands', in Maria Balshaw and Liam Kennedy, eds, *Urban Space and Representation*. London: Pluto Press, 2000, 162–174.

Bukatman, Scott, *Terminal Identity: The Virtual Subject in Postmodern Science Fiction*. Durham, NC: Duke University Press, 1993.

Bukatman, Scott, 'Cybersubjectivity and Cinematic Being', in Christopher Sharrett, ed., *Crisis Cinema: The Apocalyptic Idea in Postmodern Narrative Film*. Washington: Mazonneuve Press, 1993, 77–102.

Deleuze, Gilles and Felix Guattari, *Anti-Oedipus: Capitalism and Schizophrenia*. London: Continuum, 2004.

Dennett, Daniel, *Consciousness Explained*. London: Penguin, 1993.

Goldman, Steven L., ed., *Science, Technology and Social Progress*. London: Associated University Presses, 1989.

Harpold, Terry and Kavita Philip, 'Of Bugs and Rats: Cyber-Cleanliness, Cyber-Squalor, and the Fantasy-Spaces of Informational Globalization', *Postmodern Culture*, 11:1 (2000), <http://muse.jhu.edu/journals/pmc/v011/11.1harpold.html>

Hills, Matt, 'Ringling the Changes: Cult Distinctions and Cultural Differences in US Fans' Readings of Japanese Horror Cinema', in Jay McRoy, ed., *Japanese Horror Cinema*. Edinburgh: Edinburgh University Press, 2005, 161–174.

This is an electronic version of an article published in *Japanese Studies*, Volume 30, Issue 2, 2010, pp.185-198.

DOI: 10.1080/10371397.2010.497577. *Japanese Studies* is available online at:

<http://www.tandfonline.com/doi/abs/10.1080/10371397.2010.497577>

This PDF version © Steve Jones, 2012

Ihde, Don, *Technology and the Lifeworld: From Garden to Earth*. Bloomington: Indiana University Press, 1990.

Jones, Richard A. L., 'Nanotechnology and Visions of the Future', in *Soundings*, 29 (2005): 85–99.

Kennedy, Liam, 'Paranoid Spatiality', in Maria Balshaw and Liam Kennedy, eds, *Urban Space and Representation*. London: Pluto Press, 2000, 116–130.

Kruger, Steven F., *AIDS Narratives: Gender and Sexuality, Fiction and Science*. London: Garland Publishing, 1996.

Kunkle, Sheila, 'Psychosis in a Cyberspace Age', *Other Voices*, 1:3 (1999), <http://www.othervoices.org/1.3/skunkle/psychosis.html>

Kurzweil, Ray, *The Singularity is Near: When Humans Transcend Biology*. London: Duckworth, 2006.

Lees, Andrew, *Cities Perceived – Urban Society in European and American Thought, 1820–1940*. Manchester: Manchester University Press, 1985.

Leonard, Eileen B., *Women, Technology and the Myth of Progress*. London: Prentice Hall, 2003.

Lewis, Graham, 'Pinocchio 964, Death Powder, and the Post-Human Condition', in Jay McRoy, ed., *Japanese Horror Cinema*. Edinburgh: Edinburgh University Press, 2005, 120–129.

Masai, Yasuo, 'Metropolitization in Densely Populated Asia: The Case of Tokyo', in Ashok K. Dutt, Frank J. Costa, Surinder Aggarwal and Allen G. Noble, eds, *The Asian City: Processes of Development, Characteristics and Planning*. London: Kluwer, 1994, 119–126.

This is an electronic version of an article published in *Japanese Studies*, Volume 30, Issue 2, 2010, pp.185-198.

DOI: 10.1080/10371397.2010.497577. *Japanese Studies* is available online at:

<http://www.tandfonline.com/doi/abs/10.1080/10371397.2010.497577>

This PDF version © Steve Jones, 2012

McRoy, Jay, 'Introduction: National Anxieties and Cultural Fears in Japanese Horror Cinema', in Jay McRoy, ed., *Japanese Horror Cinema*. Edinburgh: Edinburgh University Press, 2005, 1–11.

Napier, Susan J., 'Panic States: The Japanese Imagination of Disaster from Godzilla to Akira', *Journal of Japanese Studies*, 19:2 (1993): 327–351.

Nishime, LeiLani, 'The Mulatto Cyborg: Imagining a Multiracial Future', *Cinema Journal*, 44:2 (2005), 34–49.

Perlman, Michael, *Imaginal Memory and the Place of Hiroshima*. Albany: SUNY Press, 1988.

Preston, Samuel, 'The Social Sciences and the Population Problem', in J. Mayone Stycos, *Demography as an Interdiscipline*. Oxford: Transaction, 1989, 1–26.

Sharrett, Christopher, 'Introduction: Crisis Cinema', in Christopher Sharrett, ed., *Crisis Cinema: The Apocalyptic Idea in Postmodern Narrative Film*. Washington: Mazonneuve Press, 1993, 1–10.

Shaviro, Steven, 'Two Lessons from Burroughs', in Judith Halberstam and Ita Livingston, eds, *Posthuman Bodies*. Bloomington: Indiana University Press, 38–56.

Smith, Marquard, ed., *Stelarc: The Monograph*. Cambridge: MIT Press, 2005.

Smith, Marquard, and Joanna Morra, *The Prosthetic Impulse: From a Posthuman Present to a Biocultural Future*. London: MIT Press, 2006.

Tsuji, Masatsugu, 'The IT Revolution and Telecommunications Infrastructure', in Emanuele Giovannetti, Mitsuhiro Kagami and Masatsugu Tsuji, eds, *The Internet Revolution: A Global Perspective*. Cambridge: Cambridge University Press, 2007, 39–55.

Weimer, David R., *The City as Metaphor*. New York: Random House, 1966.

This is an electronic version of an article published in *Japanese Studies*, Volume 30, Issue 2, 2010, pp.185-198.

DOI: 10.1080/10371397.2010.497577. *Japanese Studies* is available online at:

<http://www.tandfonline.com/doi/abs/10.1080/10371397.2010.497577>

This PDF version © Steve Jones, 2012

Wittner, David, *Technology and the Culture of Progress in Meiji Japan*. New York: Routledge, 2008.

Wolmark, Jenny, 'Introduction', in Jenny Wolmark, ed., *Cybersexualities*. Edinburgh: Edinburgh University Press, 1999, 1–10.

¹ McRoy, 'Introduction', 91.

² For example, *Honogurai mizu no soko kara* (2002, Japan, Nakata Hideo) was remade as the American film *Dark Water* (2005, USA, Walter Salles), and significantly influenced the plot of *Fear* (2007, India, Vikram Bhatt).

³ All references to *Kairo* refer to the film, not Kurosawa's novel of the same name (Kurosawa Kiyoshi, *Kairo*. Tokuma shoten, 2001).

⁴ Cited in Hills, 'Ringing the Changes', 167.

⁵ Kunkle, 'Psychosis in a Cyberspace Age'.

⁶ See Smith and Morra, *The Prosthetic Impulse*, and Kunkle, 'Psychosis in a Cyberspace Age'.

⁷ See Smith, *Stelarc*.

⁸ Dennett, *Consciousness Explained*, 431.

⁹ Deleuze and Guattari, *Anti-Oedipus*.

¹⁰ Jones, 'Nanotechnology and Visions of the Future', 93.

¹¹ Bukatman, 'Cybersubjectivity and Cinematic Being', 96. For a detailed description of the life-cycles of technologies and predictions for the techno-future of humanity, see Kurzweil, *The Singularity Is Near*.

¹² Ihde, *Technology and the Lifeworld*, 75.

¹³ Pyle, cited in Nishime, 'The Mulatto Cyborg', 39.

¹⁴ Kurzweil, *The Singularity Is Near*, 41.

¹⁵ Bukatman, *Terminal Identity*, 2.

¹⁶ As addressed by Bukatman, *ibid.*, 4–5.

¹⁷ *Ibid.*, 9.

¹⁸ See Shaviro, 'Two Lessons from Burroughs', 41.

¹⁹ Kruger, *AIDS Narratives*, 15.

²⁰ *Ibid.*, 18–9. See also Harpold and Phillip, 'Of Bugs and Rats'.

²¹ Baudrillard, *The Transparency of Evil*, 119.

²² Interestingly, dial-up itself has been superseded by broadband connectivity since the film was made; see Tsuji, 'The IT Revolution', 42.

²³ Bukatman, *Terminal Identity*, 69–99.

²⁴ What Anne Balsamo terms as 'previously incompatible systems of meaning'; see Balsamo, 'Forms of Technological Embodiment', 53.

²⁵ Masai, 'Metropolitization in Densely Populated Asia', 124.

²⁶ Lees, *Cities Perceived*, 26–34.

²⁷ Kennedy, 'Paranoid Spatiality', 117.

²⁸ Weimer, *The City as Metaphor*, 145.

²⁹ Lees, *Cities Perceived*, 30.

³⁰ Samuel Preston makes this point, also drawing links between 'the development of technology' and 'population size and density'; Preston, 'The Social Sciences and the Population Problem', 13.

³¹ Masai, 'Metropolitization in Densely Populated Asia', 123.

³² Perlman, *Imaginal Memory and the Place of Hiroshima*, 11.

³³ Bhattacharyya, 'Metropolis of the Midlands', 167.

³⁴ Wolmark, 'Introduction', 8

³⁵ Balshaw and Kennedy, 'Introduction', 12.

³⁶ Alcabes, *Dread*, 44.

This is an electronic version of an article published in *Japanese Studies*, Volume 30, Issue 2, 2010, pp.185-198.

DOI: 10.1080/10371397.2010.497577. *Japanese Studies* is available online at:

<http://www.tandfonline.com/doi/abs/10.1080/10371397.2010.497577>

This PDF version © Steve Jones, 2012

³⁷ Kunkle, 'Psychosis in a Cyberspace Age'.

³⁸ Smith and Morra, *The Prosthetic Impulse*, 4.

³⁹ Balshaw and Kennedy, 'Introduction', 6.

⁴⁰ See Lewis, 'Pinocchio 964, Death Powder, and the Post-Human Condition', 128.

⁴¹ See, for instance Napier, 'Panic States', 338, and Berriman, 'Rising Sun', 75.

⁴² Cited in McRoy, 'Introduction', 6.

⁴³ Sharrett, 'Introduction', 4.

⁴⁴ See Jones, 'Nanotechnology and Visions of the Future', 85.

⁴⁵ Goldman, 'Science, Technology and Social Progress'. See also Leonard, 'Women, Technology and the Myth of Progress', 1, and Wittner, *Technology and the Culture of Progress in Meiji Japan*.