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OLD, NEW AND MIDDLE-AGED MEDIA CONVERGENCE

This essay analyzes the myths that swirl around digital media convergence − managerial efficiency, experiential immediacy, global interactivity and interpersonal connectedness − and counters these with an ecological historiography that shows how so-called managerial efficiencies waste natural and human resources; the vaunted experiences of immediacy and interactivity induce ignorance of inter-generational effects of consumption, including long-term harm to workers and the environment; and constant connectedness comes with its own peculiar dispossession of the ability to dwell on the interconnections between human communication and the Earth.

Media convergence is old − very old. For example, cybertarian notions of the cyborg to come are always just over the horizon, even as they are said to be already present[1]; but like most fantasies of convergence, they draw on ancestral superstitions for their fictions: in the nineteenth century, people were supposedly governed by electrical impulses, and telegraphy was regarded as a physical manifestation of human intellect and thought-processing that could match the essence of humanity to the performance of labour (Peters 2006, pp. 142−143). In the early twentieth century, radio waves were said to move across 'the ether', a mystical substance that contacted the dead and cured cancer (Walker 1973, p. 34). That desire for a seemingly natural efficiency, matching media technology to humanness, has remained central to myths of convergence through what David Golumbia (2009) calls the cultural logic of computation − people as calculating machines.

After theorizing convergence in a less superstitious way, we will illustrate the concept's venerability with reference to a long-standing tendency in the political economy that promotes ecological destruction as a constitutive component of media technology. Connecting environmental impacts to managerial tendencies, we will then describe how corporate and state interests in old, new and middle-aged media develop and maintain convergence in Hollywood as a means of controlling labour, making profit and sustaining imperialism. We are animated here by twin desires: first, to counter the fetish of innovation that informs much talk of media convergence; and second, to demonstrate that environmental destruction and centralized power underpin it.

Theorizing convergence

In 1940s sociology and 1960s economics, 'convergence theory' emerged to account for the fact that capitalist societies were becoming more managerial and centrally planned, even as state-socialist ones grew more capitalist and entrepreneurial (Galbraith 1967, Mattelart 2002). In 1980s communication studies, 'convergence theory' addressed the emergence of common meanings within groups and organizations – the processes whereby people and institutions came to share methods of expression and topics of significance (Bormann 1985).

We are fortunate, therefore, in having a well-established literature about the macro- and micro-aspects of convergence. Links can be forged today between these institutional and symbolic approaches, tying the general to the specific. Néstor García Canclini argues that:

> The fusion of multimedia and concentrated media ownership in cultural production correlate[s] with changes in cultural consumption. Therefore macrosociological approaches, which seek to understand the integration of radio, television, music, news, books, and the internet in the fusion of multimedia and business, also need an anthropological gaze, a more qualitative perspective, to comprehend how modes of access, cultural goods, and forms of communication are being reorganized.
>
> (2008, p. 390)[2]

Of course, mixing institutions and signs is not necessarily benign. To cold war futurists such as Zbigniew Brzezinski (1969) and Daniel Bell (1977), converged communications and information technologies promised nothing less than the permanent removal of grubby manufacturing from the First World to the Third and a guarantee of continued US textual and technical power, provided that the blandishments of socialism and negative reactions to global business did not create class struggle.

The model was not necessarily coercive. Convergence can kill with kindness, and dominance by the Global North has often been achieved with the consent of leaders in poorer regions seeking to bring their countries into the world system. Consider one such (Brazilian) leader's account of communications and globalization:

> The revolution in information technology and the internationalization of production processes have helped to bring about an extraordinary convergence of methods and perceptions among business communities everywhere. Despite the continued relevance of national and regional characteristics, business circles today are definitely sharing a common code of procedures and concepts, much to the benefit of general levels of productivity—Fernando Henrique Cardoso.
>
> (2005, p. 8)

In the words of Cardoso's fellow lapsed-leftist-intellectual-cum-politician, Jacques Attali (2008, p. 31), it has become clear that a new 'mercantile order forms wherever a creative class masters a key innovation from navigation to accounting or, in our own time, where services are most efficiently mass produced, thus generating enormous wealth'; hence former US Secretary of State and master of the dark art of international relations Henry Kissinger's consulting firm advising that the USA must 'win the battle of the world's information flows, dominating the airwaves as Great Britain once ruled the seas' (Rothkopf 1997, p. 47). Those interests remain well-served: by 2009, a new division of international labour had secured industrial outsourcing to keep costs down, and textual/technological hegemony remained in the First World: fewer than 7% of Africans and 20% of Asians were connected to the Internet (http://www.internetworldstats.com/stats.htm).

That is hardly the convergence claimed by twenty-first century cybertarians; rather, as Marcuse predicted 70 years ago, technological convergence has intensified managerial coordination from above (1941). Writing in this critical neo-Marxist tradition, and *contra* the futurists, Herbert I Schiller (1976, pp. 8–9, 16) recasts cultural and technological convergence as the 'infrastructure of socialization', designed to spread from rich capitalist countries into poor post-colonial regions. It synchronized the interests of dominant strata in both core and periphery via common 'business cultures', 'institutional networks', organizational models, and modes of communication and cultural production.

This does not imply that the power of the Global North is unified or stable – it is founded on a crisis mode called capitalism whose division of labour is multi-sided and changing, especially when it crosses political territory. Powerful states with sizeable populations under their tether can compete ideologically through state socialism (the People's Republic of China in the 1960s) and economically through mercantilism (the People's Republic of China in the 2000s).[3]

The deindustrialization of economies in the Global North has been accompanied by cultural shifts that bring signs and institutions together under convergence. Writing at the same moment as Marcuse, George Orwell observed 'a general softening of manners' in British life of the 1940s, because new technology relied less and less on the 'old-style "proletarian" – collarless, unshaven and with muscles warped by heavy labour'. In his stead, a 'common culture' of middle-class 'tastes, habits, manners and outlook' arose (1982). At a scholarly level, figurational sociology has tracked this cross-class, multinational convergence of tastes (Elias 1994), as has the critique of cultural imperialism associated with Schiller.

Media and cultural studies are divided on this point. On the one hand, we buy into the individualist fantasy of audience/consumer/player autonomy – the neoliberal intellectual's dream of music, movies, television and everything else converging under the sign of empowered fans. On the other, we buy into the corporate fantasy of control – the political economist's nightmare of music,

movies, television and everything else converging under the sign of empowered firms. Those antinomies shadow what follows.

A few scholars have addressed the nexus of management, empire, labour and the electronic media from an ecological point of view.[4] But such questions remain largely neglected next to the fulsome joy with which the 'new' is made welcome. Consider the New Right of cultural studies, which invests in the discourse of Schumpeterian entrepreneurs, evolutionary economics and 'creative industries' with unparalleled zest. It never saw a new 'app' it didn't like, or a socialist idea it did.[5] By contrast, we need to remember, as James Hay (2009) and Nick Couldry (2009) suggest, that 'new' media are rarely unprecedented: they emerge in the present, but embody technologies and social relations from the past.

Convergence leaves an environmental legacy of poisoned waterways, sickened workers and toxic habitats. Moreover, the digital devices at the heart of the current convergence craze are made to break or become uncool in cycles of 12 months, and counting down (check your warranty). This planned obsolescence reinforces consumerism and animates the ideology of growth that says all technological innovation is necessary and good. An ecological history shows how shallow the promises of media convergence really are. Managerial 'efficiencies' waste natural and human resources; the vaunted experiences of immediacy and interactivity induce ignorance of inter-generational effects of consumption, including long-term harm to workers and the environment; and constant connectedness comes with its own peculiar dispossession of the ability to dwell on the interconnections between human communication and the Earth.

Eco history

> There were the accidents through which so much of that world beyond the Negro community became available to me. Ironically, I would have to start with some of the features of American life which it has become quite fashionable to criticize in a most unthinking way: the mass media. Like so many kids of the Twenties, I played around with radio—building crystal sets and circuits consisting of a few tubes, which I found published in radio magazines. At the time we were living in a white middle-class neighborhood, where my mother was a custodian for some apartments, and it was while searching the trash for cylindrical ice-cream cartons which were used by amateurs for winding tuning coils that I met a white boy who was looking for the same thing. I gave him some of those I'd found and we became friends...I moved back into the Negro community and...was never to see him again—Ralph Ellison.
>
> (quoted in Smith 2003, p. 93)[6]

Luck is often said to play a role in technological discovery, in a teleological narrative of heroic business innovators and plucky independent inventors cooking up freedom and fun for consumers, ringing in new forms of public knowledge to satisfy an innate desire for progress and artistic realism (Bazin 1967). In accordance with these foundation myths, conventional histories chart successive new media technologies along relatively autonomous and benign paths. The story begins with telecommunications (the telegraph, telephone and wireless radio) then moves to film, the phonograph and so on until digitization fuses their fate in the 1980s to create today's *Aufklärung*, where voice, data, video, print and music are delivered to consumers. This history of convergence is rife with narcissistic accounts from the media themselves, which often tell us that digitization derived from the laid-back musings of California dreamers (rather than a military-industrial-entertainment-academic complex). 'Prosumers' supposedly emerged from the dream to take over the means of production, streaming onto computers of every size and resolution (from tiny cell phones through middling laptops to large flat screens) (Barbrook and Cameron 1996, Turner 2006). Marketers delight in selling this historical achievement as a 'New TV Ecosystem' (Navar 2008).

In fact, media convergence has no such pedigree. By 1930, US telecommunications executives were planning to merge diverse technologies into single business operations. Their need to increase profitability and reduce risk fostered a desire to fuse the media industries through the accumulation of patents in electricity, chemistry and telecommunications (Noble 1977, Schiller 2007). Strategic convergence on the corporate drawing board found support among engineers, who had demonstrated that common physical properties allowed telegraphy, telephony and wireless to use electrical energy for 'intelligence transmission'. They had powerful allies among business consumers: the telephone and telegraph were 'disproportionately used by large-scale enterprises oriented toward a truly national political economy: banks, commodity traders, news agencies, and railroads' (Schiller 2007, pp. 62, 102–106, also see DuBoff 1980).

Ellison's story about scavenging for parts to build crystal sets reminds us that the history of media technology is rarely written as a sequence of happy or harmful accidents, or the outcome of searing racism. The accident that brought two young radio enthusiasts together, and the discrimination that kept them apart, requires us to rethink such tales. The mimetic fallacy, a sweet story of art, markets, realism or innovation shaping technological change in the media, cannot explain, for example, film stock privileging white skin tones over black. That occurred because developing dye couplers that highlighted darker-toned skin was not a priority for the movie industry. Whiteness came cheaply and early, at the nexus of aesthetics, chemistry, commerce and race – a nexus that should disturb convergence causation myths of immanent realism, pure supply and demand or apolitical technological progress (Winston 1996, pp. 40–43).

Placing political-economic arrangements into their ecological context discloses a culture of convergence that has been numb to the hazards created by large-scale transportation and communication projects: the natural habitats destroyed and the migratory animal paths obstructed. This hubris saw, for instance, the transcontinental railroad fragment the American Bison herd, which facilitated Native American genocide. And 'forgetting' the environment enabled media technology to converge around chemico-mechanical processes, water and steam power, deforestation, mining, smelting and toxic-waste emissions into air, soil and water, a pattern established by print and paper industries in nineteenth century North America and Europe. In the electric age, chemical batteries powered telegraphy and telephony, and fossil-fuelled national grids made radio, television and telematic networks buzz with information and pleasure (Mattelart 1996, p. 57, Standage 1998, pp. 6−21, Abrams 2001, p. 49, Lueck 2002, p. S619).

Such 'progress' was buttressed by established and emergent philosophical attitudes towards nature. Hobbes' much-quoted maxim that life was a 'war of all against all' has long legitimized humans domesticating and destroying the environment (1998, p. 105−106). For Hegel, nature's 'tedious chronicle', where 'nothing [is] new under the sun', must be disrupted by 'progress' (1988, pp. 61, 154). Across the nineteenth century and most of the twentieth, businesses and governments shared this anthropocentric orientation, which left virtually no room for the claims of conservationists, native populations or slaves. Non-human nature obstructed nation-building and profit-making. Along with labour, it was to be overcome, fetishized and exploited. The drive and skill to generate new commodities were matched only by the passion and capacity to raze anything in their way (Foster 1999). In other words, managerial efficiency and effectiveness were achieved through the domination of labour and nature, and legitimized via a growth narrative of building the new by pillaging the old: 'free' resources of land, forests, air and water. The solitary counter-discourse was 'settler environmentalism', a variant of conservationism that idealized colonial Edens (Grove 1995).

It would be misleading to project today's environmentalism into the past and question why public opinion did not perceive the harmful dimension of these processes. However, we can speculate that contradictory relations of labour, environment and the media played a part in the relative absence of such critiques. Consider the paradox of the forester who participates in the destruction of the very environment that gives meaning to his life in order to supply a key resource to the *bourgeois* media, which in turn use it to shape his opinions:

> The forester who measures the felled timber in the woods and who to all
> appearances walks the forest path in the same way his grandfather did is
> today ordered by the industry that produces commercial woods, whether
> he knows it or not. He is made subordinate to the orderability of

cellulose, which for its part is challenged forth by the need for paper, which is then delivered to newspapers and illustrated magazines. The latter, in their turn, set public opinion to swallowing what is printed, so that a set configuration of opinion becomes available on demand.

(Heidegger 1977, p. 299)

As the forester's work is subsumed into modern pulp and paper production, labour and the environment are disarticulated from one another. Paper mills and printing presses are hailed as 'revolutionary', and newspapers, magazines, books and fine paper become signs of progress and intellectual life. They bear no relation to his role, or to their own environmental aftershocks. The underlying convergence of labour, environment and media disappears from view. An ecological history that emphasizes managerial power and labour exploitation can restore the forester's severed connections, and enlighten our understanding of convergence as a destructive force.

By 1930, industrial waste was known to pose risks to workers and the waterways used by nearby populations, but nuisance and riparian laws were rarely enforced, for fear of chasing away industries (and jobs). Businesses became increasingly arrogant about dumping waste into rivers and sewage systems (landfills were not widely used until after 1945). Manufacturers of media technology presumed that the reduction or elimination of waste would slow down production and erode profits. 'Managing' waste meant dumping it on site or into waterways. The dilemma was not 'how to dispose of process residue safely', but 'how least to interfere with the manufacturing process' (Colten 1988, pp. 15−16). The story has continued in this vein over the succeeding seven decades.

Hollywood

There may be no better case than film to illustrate the environmental and managerial convergence of media technologies. Political−economic relationships underlie the way Hollywood has operated throughout its history, even before digital media blurred the lines between celluloid and electronic businesses. Consider early twentieth-century mergers of warring factions of the film *bourgeoisie* between those allied with technology as opposed to content, a distinction that went back to their respective origins in manufacturing or retail. The mythology of rag-trading-immigrants-turned-moguls hides the reality of a rapidly managerializing, professionalizing class in the 1920s and 1930s. Much of Hollywood was run not from the remnants of the lower East Side, but from alumni associations of the Ivy Leagues engaging in intra-class conflict over the primacy of mercantile versus manufacturing capital. From the 1940s, Hollywood's febrile climate produced actors and audiences alike accustomed to

media convergence. Both groups routinely moved between radio, cinema and television, respectively leaving and deducing intertextual traces as they did so. Thus began the industry's blend of urbanism and feudalism (Miller *et al.* 2005) and its wasteful ecological ways.

At a chemical level, the converged pulping and papermaking industries taught Eastman Kodak how to make its famously combustible cellulose nitrate film for 35 mm motion pictures. By the 1990s, with so-called 'safety film' long in place, the company had become the primary source of the carcinogen dioxin in New York State's environment. Its hometown of Rochester was 'number one in the US for overall releases of carcinogenic chemicals' during the final 13 years of the twentieth century (Niman 2003, p. 2). Kodak's workers were exposed to acids, toxic vapours and such irritants as silver dust and cotton dust, which can irritate the upper-respiratory tract and eyes and cause brown lung (Blair 1926, Twilight 1936, Reilly 1991, Dartmouth n. d.).

Hollywood's long project of convergence also stimulated the paradoxical harmonization of repetition and innovation through the recycling of texts within and across media. For example, 15 years after its demise, *Mission: Impossible* (1966–1973 and 1988–1990) was revived as an offshore TV production in response to a Writers' Guild strike, before emerging another decade on as a high-concept film franchise with manageable if still formidable development and promotion costs (Miller 1990a, 1990b). *The Man from U.N.C.L.E.* (1964–1968) was made by studios for television, then edited together with some additional material to form feature films (in this case, for suburban US and overseas release only). Perhaps the ultimate recycling example was the *Star Trek* TV series (1966–1969), which became a feature-film franchise in the 1980s and 1990s and generated several television shows, books, comics, conventions – and faithful academic chroniclers/unpaid publicists (Miller 2010).

Hollywood's power to recycle texts is supposedly being eroded these days as a consequence of new technology and convergence: we are all accustomed to the revolutionary rhetoric of YouTube, YouPorn and associated outlets. YouTube in particular is accorded quasi-magical properties by its advocates, as if it eluded governmental and corporate power and gave pirates and prosumers direct links to their audiences. But consider the contracts that its owner Google has signed with Hollywood. Video Identification, a surveillance device YouTube developed with Disney and Time Warner, tracks each uploaded frame of copyrighted material. It spies on users to disclose their Internet protocols, aliases and tastes to corporations, thereby permitting companies to block or allow access depending on their marketing and surveillance needs of the moment. Hundreds of firms signed up in its first year: sales of *Monty Python* DVDs on Amazon.com increased by 1000% once their corporation became part of the system and could target consumers who once watched the material *gratis*. In short, YouTube is Hollywood's valued ally in convergence (Miller 2009a).

In addition to these business practices, Hollywood also indulges in 'state work' (Harney 2002) to consolidate its convergent power. The notorious 1994 Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) required signatories to follow US norms, buttressing the Global North's textual as well as technical power across every conceivable medium by guaranteeing new rights for multinational corporations in the Global South (Frow 2006, Miller and Yúdice 2009). TRIPS helped formalize international arrangements for re-running films in repertory, television, video, DVD and the Web, and embarking on format exchanges.[7] This tendency represents an ironic metaphor: it illuminates Hollywood's cost-cutting managerial methods and anti-labour ideology via a screen conservationism that expands profits, but brings minimal if any environmental benefit.

The environmental destructiveness of media production is also tied to state violence. Centralized administrations with national aspirations have generally promoted a culture of convergence via armies and commercial enterprises that press far-flung populations into a single mold. In Benedict Anderson's (1991) words:

> the convergence of capitalism and print technology on the fatal diversity of human language created the possibility of a new form of imagined community, which in its basic morphology set the stage for the modern nation. The potential stretch of these communities was inherently limited, and, at the same time, bore none but the most fortuitous relationship to existing political boundaries.

Communication theorists call this 'technological nationalism' (Charland 1986). One contemporary manifestation of such convergence was a 1996 workshop for academia, Hollywood, and the Pentagon held by the National Academy of Sciences of the United States on the subject of electronic games. The next year, the National Research Council announced a collaborative research agenda on popular culture and military needs (Macedonia 2002, Lenoir 2003).

Bodies such as the University of Southern California's Institute for Creative Technologies (ICT) merrily exploit this convergence of war, media and the environment. The ICT articulates scholars, film and television producers, game designers and the military, using Pentagon money, Hollywood connections and faculty desire to trial homicidal technologies and narrative scenarios, in a workspace lovingly laid out by the set designer for *Star Trek*. Formally opened by the Secretary of the Army and the head of the Motion Picture Association of America, the Institute started with US$45 million of the military's budget in 1998, a figure that was doubled in its 2004 renewal (Deck 2004, Silver and Marwick 2006, p. 50, Turse 2008, p. 120). The ICT collaborates on major motion pictures, for instance *Spider-Man 2* (2004, dir. Sam Raimi), and produces such Pentagon recruitment tools as the popular electronic game *Full Spectrum Warrior*, which double as 'training devices for military operations in urban

terrain'. The Pentagon even boasts that *Full Spectrum Warrior* 'captured Saddam': the men who dug Hussein out had been trained with it (Burston 2003, Harmon 2003, Stockwell and Muir 2003, Andersen 2007, Turse 2008, pp. 119, 122).

To keep up with ICT's work, why not listen to podcasts from *Armed with Science: Research Applications for the Modern Military*, which you can download at the Defense Department's web site (http://www.science.dodlive.mil). You will learn how the Pentagon and USC are developing *UrbanSim* to improve 'the art of battle command' as part of Obama's imperial wars. It is described as a small shift from commercial gaming: 'instead of having Godzilla and tornados attacking your city, the players are faced with things like uncooperative local officials and ethnic divisions in the communities, different tribal rivalries', to quote an Institute scholar in the pod (3 March 2010 edition).

There are ecological implications as well. For all the Pentagon's latter-day claims to be 'going green', and work done by Hollywood studios to counter their status as the biggest polluters in Los Angeles, the outcome of such articulations is environmental as well as imperial convergence. Military uses of electronics and information technologies link the media to destroyed terrain and infrastructure, radiation, conventional pollution, buried ordinance, defoliants, land mines, carcinogenic chemical deposits and toxic effluents from bases (Leaning 2000, Corbett and Turco 2006, Shachtman 2010).

Conclusion

Convergence is yesterday's, today's and tomorrow's news. Its touchstone is environmental destructiveness, tied to the power of the military-industrial-entertainment-academic complex and managerial command over labour. The convergence of chemico-mechanical technology, capitalistic competition and state collusion made photographic, electric and electronic media rapacious despoilers of the Earth.

The lesson of the newer media technologies is the same as print, radio and television: each one is quickly dominated by centralized and centralizing corporations, regardless of its multi-distributional potential, and each one depends on a massive contribution from the Earth and workers. And the biggest environmental threat from media convergence? At current levels, residential energy use by electronic equipment will rise to 30% of the overall global demand for power by 2022, and 45% by 2030, thanks to server farms and the increasing time people around the world spend watching screens (The Climate Group 2008, pp. 18–23, International Energy Agency 2009, pp. 5, 21, Hancock 2009, Mouawad and Galbraith 2009).

If we seem to be taking too hard a tone with the playful labour of hackers, YouTubers, bloggers and other volunteers in the digital congregation, it is because the cybertarian chorus we hear about the blurred lines between recreation and work − 'playbour' (http://www.digitallabor.org) − reminds us what the paper-mill owner must have said about the rivers and endless forests at his disposal; or how the first voltage barons and their banking and communications costumers felt about cheap coal. The old convergence needed inexpensive, even free, resources for its revolution; the new is no different. It remains to be seen how long playbour can continue in its hybrid form as a resource before a wage comes to remove the fun, or copyright takes the tools away (Ross 2009).

Playbour notwithstanding, workers in Asian and Latin American electronics factories still face exposure to dangerous toxins, and have weak institutional protections (low levels of unionization being the most important). International movements and local organizing to make those jobs safe and worthwhile are just starting, and under extremely inhospitable political conditions. Vincent Mosco rightly warns that today's media workers must 'respond to the convergences in technology and in corporate structure...with a convergence of their own', through 'large integrated trade unions' and 'new forms of worker organization that resemble social movements' (2009, p. 351).

Marx avowed that labour is 'a process in which both man [*sic.*] and Nature participate, and in which man of his own accord starts, regulates, and controls the material re-actions between himself and Nature' (1987, p. 173). The result is 'growth' at a price. Subsequent struggles over both aspects can generate positive as well as negative outcomes. The Industrial Revolution produced the conditions of possibility for occupational health and safety as a medical discourse, due to the contradictory coincidence of exploitation, philanthropy and science. From the 1830s, German and US research by clinicians and unionists into (free) labour disclosed that child workers proliferated, hours were endless and life expectancy was diminishing, while the post-Civil War period in the US saw massive protests by black and women workers against the particular privations they suffered (Abrams 2001).[8]

As the current celebration of convergence inevitably winds down, will it become easier to comprehend that digital wonders come at the expense of employees and ecosystems? Economies based on accelerating innovation, rising energy consumption and growth ideology are already facing strategic problems of scarcity, climate change and fiscal crises arising from the monumental cost of repairing the environment. To see them through the fog of cybertarianism, we need to establish some 'autonomy from the industry and fan logics' (Beaty 2009, p. 24). The myths that swirl around digital media convergence − managerial efficiency, experiential immediacy, global interactivity and

interpersonal connectedness – must be countered with histories of the environmental plunder and toxic sweatshops that have made old and new media possible. Then people like Heidegger's forester can take the long view of where their labour goes, and their ideas come from.

Acknowledgements

Notes

1   See Philips shavers promising a 'virtual you' (http://www.shaveeverywhere. com/deforestation.html?origin=1_us_en_deforest_aggregate) or any utterance from <http://www.gizmodo.com> or <io9.com/tag/posthumanity>.
2   For an exemplification of this work, see Section IV of Aguilar *et al*. 2009.
3   See Munro 1971, Dutton 2005, Liu 2010 for Chinese ideology; see Agnew 2009, Krugman 2010, Zhao and Liu 2010 for Chinese mercantilism.
4   See Raphael 2003, Smith and Raphael 2003, Raphael and Smith 2006, Parks 2007, Sterne 2007, Maxwell and Miller 2008a, 2008b, 2008c, 2008d, 2008e, 2009, Miller 2008, 2009b, Berland 2009, Gates 2009, Hanke 2009. We admire the way that the Media, Communication and Cultural Studies Association in the UK has mobilized to make its conventions as green as possible, and has a Climate Change, Environment & Sustainability Network <http://www.meccsa.org.uk/climate-change-network>. We also note the efforts of the Environmental Communication Network <http://www. esf.edu/ecn>.
5   See Keane 2009, Flew and Cunningham 2010, Ritzer and Jurgenson 2010 for useful summaries of these positions.
6   Vincent Mosco tells a similar story about his relationship with his cousin in the old Radio Row of downtown Manhattan (2004).
7   Formats remain the only one of these topics that media and cultural studies has examined with consistent attention. See Moran (1998), Moran and Keane (2004), Moran and Malbon (2006) and Moran (2009).
8   See Smith (2007) for the history of African-American environmental thought.

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