

Greening Cultural Labor

The Future of Media Accounting

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ABSTRACT

In the early twenty-first century, environmentally friendly accounting practices in the creative industries were confined to site-specific budgets of individual films or studio operations. Any external environmental costs were either ignored or written off as too hard to measure. This chapter considers the media's future by imagining a new kind of accountancy freed from the bonds of corporate media. Richard Maxwell and Toby Miller have devised an imaginary world where accountants, imbued with the values of green citizenship, set off on a quest to uncover the environmental and labor conditions within the global supply chain of consumer electronics and information and communication technologies. This speculative fiction helps the authors conjure up conditions in which media producers and media studies scholars address human-centric despoliation of the Earth's ecosystems and the toxic exploitation of media workers.

<i>Date:</i>	2010
<i>To:</i>	All Crew
<i>From:</i>	Accounting
<i>Subject:</i>	Tracking Carbon Emissions – Accounting Requirements

As part of News Corp's Global Energy Initiative, all Fox productions must track and report on their carbon emissions. Accounting will be tracking carbon emissions throughout production and requires the following information from your department when submitting any documents for payment or reimbursement.

(Twentieth Century Fox, Guide to Greening Film and Television Production)

Introduction

Media studies has elevated many heroic figures in its self-fashioning mythology. Directors sidestep the studio system. Independents outwit the suits. Unions stand against management. Peripheral nations attract Bollywood and Hollywood productions. Journalists damn proprietors. Audiences outwit filmmakers. Film students stupefy professors. Downloaders defy corporations. Technologists astonish governments. Bloggers outpace professionals. Hagiographic stories inform the field's prevailing myths of counter-power with narrative trajectories that have become banal and repetitive. In keeping with the desire for the new, we have sought a distinctly unglamorous and unlikely agent of historical change to add to this predictable pantheon: the accountant.

Why the accountant?¹ We are interested in a media future where ecologically sound principles guide cultural labor and media production. As it happens, accountants who currently work in large media organizations sit at the hub of information about the environmental costs of media production. This position gives the accountant, even one with no inherent yearning to be green, a vast and growing responsibility for measuring and reporting cultural work's impact on the environment. Such green accountancy marks a salutary turn to environmentally friendly practices in the creative industries. But the confinement of this new form of accounting to site-specific budgets of individual films or studio operations limits its ability to assess the external environmental costs of making media, thereby also limiting the public's awareness of the deleterious effects of what they consume and valorize.

In order for the industry to move beyond these confines, a new kind of accountancy must be imagined. In the middle section of this chapter, we offer a fictionalized version of accountants of the future who draw on environmental and union activism, scholarship, and public policy to free themselves from the bonds of the movie studio or site-specific shoot. A new kind of accountancy emerges at the cutting edge of media theory and practice in this forward-looking scenario. The new accountants' odyssey leads to illuminating and frustrating encounters with the international political economy, which transform their perception of

cultural labor and measurement. As they envision a path to greener cultural labor, these future accountants are challenged by ecological questions that cannot necessarily be answered by measurement alone. We conclude with a return to the present-day view of the media's future.

2010: Blessed are the Accountants . . .

By late 2010, the professional and personal greening of cultural labor was already occurring in serious ways across the US, Japanese, and European culture industries. Cultural workers were being urged to follow environmentally sound practices on the job and, in the overreaching Fordist tradition of governmentality, during their non-work time as well. Major movie studios had programs that included installing low-energy light-emitting diodes to illuminate buildings, sound-stages, and outdoor signage; reducing paper use; composting organic waste; retrofitting buildings with computer-controlled air and heating systems and environmentally friendly materials; paying for reforestation with production budgets to account for film pollution; teleconferencing; recycling wood, paper, recording media, metals, film stock, electronics, and printer and toner cartridges; managing chemical use and disposal; reducing or eliminating hazardous materials; eliminating and recycling waste water; installing solar and other renewable energy sources; and networking with green suppliers and organizations such as the Greencode Project (Gardner, 2007; Producers Guild of America, n.d.).

These developments were encouraging to those wishing for a green media future, even though the culture industries came late to the realization that a slash-and-burn attitude to the environment was unsustainable. Their eco-ethical awakening can be dated from the period between the mid-1990s and 2010, somewhere between *Titanic* (1997) and *Avatar* (2009). The primitive state of this transition to greener production is evident in the accounting offices of the large studios – the point on the organizational chart where green means business. Consider our opening epigraph to this chapter, a heading from the sample memo to production workers found in Fox's *Guide to Greening Film and Television Production* (n.d.). As in most large organizations, the accounting office operates as an informational nodal point between management and labor, particularly where the audit of material expenditures details inputs of capital and energy into production. It is a matter of expediency to make accountants working in media firms responsible for tracking carbon emissions via purchases entered into debit columns on spreadsheets. A small set of transactions has come to denote carbon emitted from filmmaking and TV production: gallons of fuel, nights at hotels, board feet of lumber, air miles traveled, kilowatt hours burned, and so on.

In the early twenty-first century, studio accountants are expected to know how much carbon the movies emit: small films are said to generate 145 tons; middling shoots, 970 tons; fast and furious, 4,000 tons; and so on ("Calculating," 2010). The political economy presses hard to keep this green knowledge in the service of business

as usual (BAU), which means that if dirty air can be quantified, it should be monetized, with ethics just another word for nothing left to regulate. Enter the market for carbon offsets (indexed to a firm's reduction of carbon dioxide and other greenhouse gas emissions), where organizations seek investment for green innovation or buy credits to plant trees or fund someone else's green company. Carbon offsets serve as the primary currency paid by or to a media firm to cover environmental behavior.

This arrangement limits the scope of environmentally sound production practices in the creative industries, because whatever cannot be counted cannot be included in the accountant's impact assessment: for example, material or labor costs outside the production sites overseen by accounting, on supply chains that are upstream or downstream of creative productions. Accountants know the price of electricity and phone calls, but cannot include an audit of carbon emissions generated by their suppliers in the energy and telecommunications sectors; they know how much hazardous waste a film or TV shoot produced, but have no way to tally and monetize off-site environmental emissions from recycling, incineration, long-haul transport, or the costs associated with dumping toxic waste into landfills. Cultural labor beyond local production is not among the green accountant's line items. It did not help matters that existing environmental accountancy focused entirely on natural resources as an asset in general economic welfare accounts.² In order to implement an accounting system that was adequate to the global scale of green media accountancy, a new kind of accountant was needed. The following section describes an approximate world where we find the accountant of the future.

Sometime in the Near Future³

The situation in 2010 necessitated a new kind of accountant, one who would take the virtue of accountancy's *modus operandi* – count everything! – and dedicate it to finding out how cultural labor and the environment connected beyond the gates of the studio. Such an endeavor would have to identify international flows of toxic materials, intersectorial and transborder carbon emissions, and other environmental harms that accompany cultural labor worldwide. This holistic and global purview was underdeveloped in governmental and academic studies. As the new accountant would come to realize, this was not a failing of desire or will on the part of these researchers. Right-wing, nationalistic politics, along with global business lobbies, hindered the already herculean task of gathering accurate data on an international scale. It was virtually impossible to track the sources, volume, and destination of even discarded media technologies, the electronic waste (e-waste) of dead or obsolete computers, printers, peripherals, music players, cell phones, ink cartridges, and other tools of contemporary media production. One typical study from 2010 concluded that even “*estimating* waste flows is not an easy task [. . . and] has to be determined on the basis of often scarce information” (Zoeteman, Krikke, & Venselaar, 2010, p. 416, emphasis added). Another investigation from the same period argued that

existing “accountancy rules, purchasing policies and reporting standards do not consistently require attention to environmental externalities – including social costs due to impacts on ecosystems and biodiversity” (TEEB, 2010, p. 27).

Accountants of the future faced many challenges. One of the most daunting was scale. Tens of millions of workers built the world’s information and communication technology (ICT) sector alone, with numbers continuing to grow in accordance with the New International Division of Cultural Labor (NICL), which has seen cultural production go offshore from cultural ownership, in the same form as automobile or computer manufacture (Miller, Govil, McMurria, Maxwell, & Wang, 2005). The new accountancy learned to comprehend this scale of labor⁴ only to be infuriated by media owners’ opposition to ever fuller disclosure. Media owners justified their opposition with a mixture of legal arguments about proprietary information, business freedom, and respect for national sovereignty (the Chinese were most adamant, deploying the sovereignty argument to protect illegal e-waste businesses in the ecological dead zones of the Pearl and Yangtze river deltas). Such powerful resistance incited the accountants’ demand for an end to the existing system, which obscured the number of workers in the global supply chain and undermined accurate assessments of the jobs that produced waste byproducts, harmful substances, and other measurable environmental inputs. This became the start of a long revolution for the new accountancy, with most successes based on a clear and persistent alliance with labor unions, environmental activists, and researchers who had struggled in prior decades to generate accurate statistics on workers and working conditions in the global media, ICT, and consumer electronics (CE) sectors.

The new accountancy became increasingly militant in its struggle to count everything and everybody in the international division of labor. This radicalization was based, somewhat ironically, in a collective realization that the quantification of populations had emerged from contradictions in the capitalist political economy that linked surveillance, social control, and liberation. This nexus would not only enable corporations to exercise absolute authority over a workforce, which was technically free in that its members could resign if they so wished. From the perspective of the radical accountant, it also provided conditions for information to be used against the powerful. The division of labor that the accountants of the future fought to evaluate had not evolved into the transparent system that classical economics long ago predicted – in terms that the pioneering social scientist Emile Durkheim (1984) chided for promising a “higher law of human societies and the condition for progress” (p. 1). Rather, as the Marxists had shown, capitalism shaped the division of labor into a key mechanism of power and control by subdividing work, multiplying its inputs, and spreading it unevenly across the planet. The interconnectedness of workers that constituted the progressive dimension in the division of labor – Workers of the World Unite! Solidarity Forever! – was obscured to those working within it, while being perverted and exploited by those with command over it (Marx, 1906, pp. 49, 83). The accountant of the future vowed to fight for as long as it took to achieve numerical transparency, not for the bosses but to reestablish the ties of workers (if only statistically at first) up and down the interlocking supply chains of media and ICT/CE production.

The first positive result came with the start of a systematic correction of spreadsheets in the global human resources system, which had hitherto depicted occupational extremes between a total system of surveillance of workers and those “disappeared” from the rosters. For instance, the new accountancy expanded its purview to include data on the number of people extracting the metals that went into electronic media devices. The new data went beyond the 4,000 people known to accountants in 2010 to include biographies of a growing portion of the 13 million people said to work in the informal mining sector in Asia, Latin America, and Africa (GeSI & EICC, 2008, p. 56; International Labor Organization, 2010). With the help of labor unions, nongovernmental organizations, local activists, policy-oriented journalists, and even some corporate social responsibility audits and social networking sites, the new accountancy revised the count of ICT and media workers to over 200 million worldwide, from earlier estimates of 70 million (Raina, 2007, pp. 18–25).

Despite constant interference and threats from corporate lawyers, the American Civil Liberties Union, and non-independent (company) trade unions, a statistical picture emerged that revealed organizational relationships, intersectorial linkages, and regional points of alliance unacknowledged by the old accountancy. Eventually, the new accountants identified assemblages of interconnected labor in global media production and measured the impact of the chemico-mechanical processes attendant to each line of work: including, among others, computer scientists, engineers, designers, market researchers, miners, mineral brokers, refiners, chemists, factory laborers, server-warehouse employees, telecommunications workers, truck drivers, salespeople, office clerks, and above- and below-the-line media production workers. Not only could the new accountants identify and count vast numbers of workers throughout the supply chain; their technique also provided ways of tracking emerging constituencies of workers, from elemental stages of mineral extraction to home assembly.

They achieved much of this new and improved, more labor-inclusive, accounting program by internationalizing data collection and installing an ethnographic dimension as part of their research methodology. The new accountancy benefited from learning world languages and cultivating a professional delight in cultural differences – they identified many new facets of everyday life affected by the global supply chain. Some older practitioners saw these worldly and polymathic characteristics as a welcome recovery of a twentieth-century notion of the humanities – one that informed interdisciplinary and internationalist ideals lost by public higher education by the end of that century. For the accountants of the future, in contrast, nostalgia and highfalutin principles had nothing to do with acquiring these capabilities; these were fundamental skills needed for the job ahead.

The data were informative; the *personal* aspects became transformative. As numbers gave way to faces, life stories, and human struggles, the accountants of the future imagined unorthodox ways to combine ecological perspectives with biographies in global assembly lines. They tried to quantify these connections, struggling to find the right algorithm for measuring the environmental cost of geographical co-presence in the NICL. They could budget for the gaffer in Hollywood eating sandwiches on

biodegradable bamboo plates while on breaks from handling cables, monitors, and advanced electronics. And they could perceive how that gaffer related to teenage girls in Mexico who assembled those technologies in conditions that denied them lunch-time luxuries and exposed them to toxic materials.⁵ But they could not enter these relationships into the calculus.

These challenges did not stop the new accountancy from developing methods of calculation unknown to the old system of green audits. To the accountant of the future, earlier so-called green auditing procedures appeared ludicrously narcissistic in hindsight, because they focused on media producers' own growth-based criteria for evaluating the economic performance of the "creative industries" (a term from the early twenty-first century that summed up the narrowness of their world view). The old-school criteria had valued such environmentally harmful economic activity as building new, electricity-guzzling server warehouses equally or more than green innovations.

Scientific knowledge posed a second major challenge for the new accountancy, which experienced a steep learning curve in trying to link cultural labor's environmental impact on the scale of the NICL. The accountants of the future learned of biothermal risks to workers and consumers exposed to human-made electromagnetic fields, and scientific parameters for human tolerance to these forces. They learned the basic toxicological properties of carcinogenic and poisonous gases, metals, and chemicals used in ICT/CE manufacturing, unpacking a daunting array of elements, synthetic compounds, and their effects on human health: aluminum, antimony, barium, beryllium, cesium, chromium, cobalt, copper, gold, lead, mercury, molybdenum, nickel, platinum, silver, tin, titanium, tungsten, zinc; acidic cupric chloride, alkaline ammoniacal, sulfuric peroxide, argon, arsine, silane, phosphine, arsenic, selenium, polychlorinated biphenyls, trichloroethylene, ammonia, methanol, glycol ethers, methylene chloride, nonylphenols; and so on.⁶ For all along the international division of cultural labor, workers were exposed to combinations of these materials, with serious consequences to their health.

Some chemicals had short-term effects, such as skin and eye irritation, headaches, vertigo, and nausea. Others had to be absorbed into the blood stream over longer periods before harmful disorders could be diagnosed. Then there were the bioaccumulative toxins that would collect in fatty tissue; these were long understood to flow up the food chain through land and waterways before being consumed by humans and taking up residence in their bodies. There was another class called endocrine disruptors, found in many plastics, which upset normal functioning of the endocrine system by acting as if they were human hormones, leading to a variety of harms (cancers and other problems in reproductive systems, thyroid, metabolism, etc.). One of the most dramatic ways the new accountancy found to illustrate the longevity of these pathogens in the environment was to borrow from research on e-waste, which provided a testing ground for the effects of open exposure to the chemical and heavy metal content in ICT/CE (Leung, Duzgoren-Aydin, Cheung, & Wong, 2008; Ray, Mukherjee, Roychowdhury, & Lahiri, 2004; Wong, Wu, Duzgoren-Aydin, Aydin, & Wong, 2007).

Enclosed hard drives, backlit screens, (increasingly rare) cathode-ray tubes, wiring, capacitors, and metals like gold, silver, and lead posed few risks while these toxic materials remained encased. In contrast, discarded electronics had the potential to expose workers to a salad of toxic components when dismantled. Parts could be reused or swapped for newer parts to refurbish older devices. But those targeted for the waste stream underwent further destruction in order to collect remaining parts and metals of value (gold, silver, copper, and rare-earth elements are examples). That was when serious health-and-safety risks occurred, including bone disease, brain damage, birth defects, diseases of the stomach, lungs, and vital organs, and disrupted biological development in children. These conditions resulted from exposure to heavy metals (lead, cadmium, and mercury, among others), dioxins emitted by burning wires insulated with polyvinylchloride, flame retardants in circuit boards and plastic casings containing polychlorinated biphenyls, and poisonous fumes emitted in search of precious metals (Leung et al., 2008; Ray et al., 2004; Wong et al., 2007).

The accountants of the future determined various ways to calculate the environmental cost of toxins that outlasted the devices containing them. This was an important achievement, given that existing methods for measuring the impact of toxic e-waste primarily consisted of tracking the volume of sales and disposal of electronics and electric devices (Schor, 2010, pp. 32–37; Zoeteman et al., 2010, p. 418). The longevity of pathogens had to be quantified and entered into ledgers along with other risks associated with damages to ecosystems. The valuation was carried out using a model that assessed ecosystem services and biophysical benefits as economic inputs – for example, multiple relevant ecosystems added value to media and ICT/CE production, from the marine and desert biomes that endow the Southern Californian climate to the ecosystems providing food, water, and housing to cultural workers worldwide. The new accountancy added the costs incurred when waste, harmful byproducts, or other neglectful practices associated with media production devalued ecosystem services.

The method worked for a short-range projection of the costs of such damage, but was of little use in long-range valuations. The problem was setting a discount rate that compared present and future costs of environmental damage. Given the ethical dilemma of determining the value of ecosystem services for future generations, it was not practical to use existing economic models, which assumed that technological fixes would reduce the cost of ecosystem repair – for example, yet-to-be discovered nano- or biotechnology that could consume plastic or neutralize toxins. The new accountancy was uncomfortable with the idea that an accurate count of long-term costs was impossible, though practitioners agreed to present “sensitivity analysis of cost-benefit-ratios using a range of different discount rates [. . .] to highlight different ethical perspectives and their implications for future generations” (TEEB, 2010, p. 26). This compromise would become untenable as more time, and eventually more weight, was given to ethical understanding of the environment’s future. A turn to ecological ethics in the new accountancy was underway.

The limits to calculating intergenerational impact confounded the new accountants, who had striven to understand the geographical scale of the NICL and the

interconnectedness of cultural labor over time. They simply could not trust the very cost-benefit numbers they had produced about the future. Unlike climate scientists, who looked to the geological past to help predict changing atmospheric conditions, the accountants of the future could only offer probabilities based on political trends and BAU. This produced a list of general changes in the relationships of the environment to media and ICT/CE production: for example, in the absence of a massive rollout of public works worldwide to build clean energy systems, a greater proportion of greenhouse gases would probably come from media sources such as server warehouses, where electricity consumption was rising 150% a year on average, while residential ICT/CE equipment was projected to take 30% of global electricity output by 2022 and 45% by 2030 (International Energy Agency, 2009, p. 21; International Telecommunication Union, 2009, p. 4). Accountancy did not do well with such generalities. Even if these projections could direct action toward particular futures like energy-efficient production plants, smart grid/residential metering, or abundant low-wattage entertainments, there would also be unpredictable outcomes, from scientific discoveries to catastrophic events. Such uncertainty took the accountant far from the comfort of cost-benefit analysis (CBA), a beloved risk-management tool for monetizing human and nonhuman effects of environmental change. CBA could not account for intergenerational changes; and it did not work under conditions favoring interterritorial equity, which the new accountants sought to measure as they overcame ethnocentric assumptions about the relative value of cultural labor living across national borders or intranational lines of difference.

The accountants of the future had entered a domain where eco-ethical thinking proved a more powerful tool than CBA and other accountancy methods. They continued to count the numbers of US federal prisoners and pre-teen Chinese, Nigerian, and Indian girls picking apart electronics for precious metals or reusable parts.⁷ But that kind of quantification could not pinpoint the human and environmental cost of dust laden with toxic heavy metals from circuit boards and other components inhaled or blown afield from recycling sites, or the harm associated with exposure to multiple sources of electromagnetic radiation.

This shortcoming resulted from the physical difficulty of establishing and measuring the risks faced by all planetary inhabitants.⁸ It illustrated a limitation to the discourse of risk management, which focused on how particular pathogens were allocated across populations, rather than seeking to eliminate such risks altogether. From an eco-ethical standpoint that valued human and nonhuman nature alike, any effort to measure and manage “safe amounts” of exposure to toxins and pollutants was a dirty ideological game. The new accountancy saw this as a remnant of washed-out “modernity,” wherein everyday life could progress only under persistent threats to well-being. The new accountants refused to be a part of the propaganda of “risk society,” which naturalized these threats using future-oriented scenarios that were based on a self-aggrandizing cocktail of fragile numbers and faith-based predictions. They knew too well how such calculations of chance could freeze critical thinking and rouse thoughtless decisions that only served to metastasize harmful outcomes.

Ecological ethics, in contrast, offered a considerate and sensible alternative: assuming that humans were ignorant of the future effects of present-day action, adopting a deep regard for the natural world, and acting with caution rather than hubris when establishing a human presence within it. The new accountancy established guidelines that placed an extremely rigorous burden of proof on media and ICT/CE producers, who claimed that their business strategies would not introduce harmful substances or practices into the environment. In some cases, where there was scientific consensus about the chemical-mechanical processes used in the supply chain, the approval process was quite streamlined. Many progressive producers embraced the “better safe than sorry” environmental principle introduced by their green “bean counters.” Others resisted, among them a very vocal, obstinate group of climate change-denying media owners, most of whom were caught in the paradigm of business school accounting methods introduced in the 1970s. This group would soon be squeezed by an unlikely coalition of twenty-something and eighty-something media makers who joined the green cultural labor movement that had been growing within the global cultural industries.

This division between eco-ethically guided producers and BAU manifested itself in an ideological battle. The former promoted the virtues of sustainable media making. The latter promised abundant electronic and visual pleasures pulsating with innovative design and symbolic power. The BAU types had the upper hand in this war for hearts and minds, and enjoyed some success in fighting the spread of the new accountancy through union busting and monopoly practices that locked out green competition. But the sustainability coalition began to expand exponentially as green alliances formed across the political spectrum. Increasing numbers of media business owners and policymakers came to understand that the information, entertainment, and educational aspects of the media could prosper within a modest revenue model based on a mature and honest environmental accounting system that prohibited all practices that are not indefinitely sustainable by the Earth’s ecosystems. The BAU faction continued to reap huge profits from selling ever more ingenious gadgets that were built within its network of suppliers, in regions unregulated by green guidelines, and sold in markets where policymakers feared the revolt of voters who saw any prohibition on their consumption of high-tech goods as a threat to freedom and choice.

The accountants of the future realized their goals to increase the accuracy of measuring environmental costs, broaden the categories of labor involved in media and ICT/CE production, and forge a new calculus that clearly delineated how to make cultural labor greener throughout the global supply chain. The limits to accountancy’s role were in part transcended by the turn to eco-ethical deliberation. Once the new accountancy crossed the threshold toward legitimacy on a multinational scale, there was a dramatic and immediate effect on the outlook of global business, as the addition of environmental accounting to the bottom line created an epidemic of “writedowns,” which caused green businesses to operate in the red for over a decade.

At first, this gave a boost to the BAU faction, which enjoyed a rush of investment from financial markets (historically intolerant of environmentalism, in any case). This appeared to weaken the green faction, which BAU briefly succeeded in defeating on political and economic fronts. Eventually, however, three major institutional changes propelled green practices into the forefront of a new, vibrant media economy. First, policymakers in key regions – China, India, the European Union (EU), Brazil, Canada, and Japan – established social funds from which green media organizations could draw in order to invest in long-term, sustainable practices. This countered other market pressures, which favored BAU. Second, larger conglomerates closed their worst polluting properties or invested in resource replacement, turning formerly wasteful, toxic practices into efficient, clean operations (simple changes in chemistry and fiber resourcing, for example, made paper production viable again). The debt incurred by firms was high at first, but the pay-off came via lower environmental costs. Small- to medium-sized media/ICT/CE production companies bought polluting properties and transformed them through available technologies funded by environmentally oriented venture capitalists. The thinking here was that the green accountancy was right (on the money) for medium- to long-term revenue generation, and that only a fool would believe that ignoring environmental costs in bookkeeping could provide lasting advantages in the marketplace.

Finally, the asymmetrical takeup of green products in the largest consumer markets – the EU, the United States, India, China, and Brazil – began to shift as marketers realized that the European practice of consumer education in green product quality did not diminish sales. US regulations had not changed effectively for 20 years, allowing a continuous flow of toxic-laced products to be sold there; whereas in the EU, regulators had ensured that media products and consumption were indexed to ecological enhancements, which improved the quality and lifetime of technological goods, reduced the consuming frenzy for ephemeral fashion/style in consumer goods, and underwrote the policy of extended producer responsibility for electronic and electric goods. Consumers loved the result: they bought high-quality media technology built on green service principles. When real (i.e., noncosmetic) innovation made the gadgets obsolete, the brand-owner would upgrade or replace the device at a price that would either be tied to the minimal changes in the new components or was already paid for in the original purchase. (Most top brands in Europe had eliminated virtually all waste and discovered designs that allowed for nearly complete reuse of the component parts.) It took some time for production practices throughout the supply chain to reach ecologically sustainable benchmarks, but eventually even the brands designed as well as made in China and India, once egregious polluters though early innovators in state-based green technology, surpassed the neoliberal United States in green media production.

Green accountancy had established a new paradigm for cultural labor. Institutional changes generated a steady stream of information about successful green cultural labor and technologies, with fact-filled reports shared widely in business and government circles. But this hegemony remained vulnerable to challenges from BAU, which

persisted in its ambition to end the “reign of tree huggers.” This highly capitalized faction of media owners could not tolerate the growing consensus on sustainability lest it ruin their empires.

As in the past, BAU relied on parallel lines of attack – mass persuasion and control over the political processes – focused primarily in the United States, where it was easiest to control political discourse and where domination of a huge consumer market helped fund political ambitions. Through media and communication channels, propaganda convinced consumers that green media technology was a scam. The bourgeois media depicted suffering and hard-working consumers locked out of the good life by expensive green technologies while portraying themselves as providing affordable electronic and electric pleasure to the downtrodden. “The green companies must think you are chumps,” was one typical retort from a BAU-sponsored commentator. Such rhetoric, which played on the economic self-interest of consumers, was a powerful distraction from the evidence of sustainable, successful eco-ethical practices.

The BAU faction also spent large portions of its wealth on political candidates whose campaigns spread fear of big government, foreigners, and socialist plots aiming to smash freedom of choice and economic growth. This strategy won many battles. But in the end, their share of the market diminished as consumers, investors, and policymakers realized that their accounting system fostered too many costly gaps, not least the accurate measurement of environmental impact. With losses came increased resentment within the remnants of BAU, which retreated from politics for a time in order to regroup, form new alliances, and build a movement to win back their access to hugely profitable business. That’s another story.

Conclusion

The preceding speculative fiction imagines some conditions of possibility for green cultural labor to prosper in a world whose political-economic arrangements favor movements to counter the twentieth century’s despoliation of the Earth’s ecosystems. Our choice of an “accountant of the future” as an environmental hero is somewhat whimsical, though it was inspired by present practices within media firms that position accountants as pivotal agents of change in greening cultural labor.

The hopeful scenarios in our imagined media future are conveniently disengaged from the present political economy, which is hardening into a new Gilded Age, where wealth concentration and hyperconsumption, even in depressed economies, freeze critical thinking about climate change and the means to achieve policy and public/private investment for ecologically sound economies – public transportation works, alternative energy, low-wattage entertainment, green technologies, and so on.

In today’s United States, right-wing demagogues rail against foreign influences and climate science, two sources that provide scores of real-life examples of how

large- and small-scale human practices are reducing greenhouse gas emissions and toxic waste. Green design initiatives surround us as we write, but the built environment and consumer goods continue to be defined by a passion for fossil fuels and non-biodegradable plastic (Schor, 2010).

Our call for better media accounting was provoked by the fact that corporations and governments in the Global North are currently sending toxic e-waste to other countries in the absence of a clear measurement of the volume of trade in these poisons. In addition, the global supply chain depicted at the outset of our story is not unlike the one we find today – workers uncounted and unknown, living, ailing, and dying across a vast assembly line in which present-day wonders are manufactured. Our fictitious militant accountants were frustrated by lacunae in existing policy regimes, which, while laudable in many ways, fail in most attempts to find the political resources for effective accounting and policy implementation. Japan, Canada, and the United States still undermine the 1995 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, which prohibits the transport of dangerous material (United States Government Accountability Office, 2008, pp. 23–27, 24 n. 22; van Erp & Huisman, 2010). And yet, we have seen hopeful signs in legal investigations of unlawful e-waste exports to West Africa (Walsh, 2010), the recodification of e-waste business as global organized crime (Criminal Intelligence Service Canada, 2008), and EU efforts to license and oversee e-waste exporters, traders, dealers, and brokers (van Erp & Huisman, 2010).

We have based the ethico-political values of our media future on “green citizenship,” which presses for basic rights that include clean air and water, for the acceptance of interterritorial and intergenerational responsibility to care for the Earth’s ecosystems, and for business corporations to pay for the social and environmental resources they exploit. We have tried to imagine the contradictory and complicated endeavor required to bring such rights into existence with a view to the future, which in our fictionalized version ends up almost confounding the new accountancy. As we have argued elsewhere, this kind of intergenerational thinking must pervade media studies if we are to confront our logocentric interdependence on the technology we engage with, criticize, and promote (Maxwell & Miller, 2008d).

The battle of future accountants against the purveyors of BAU media is also a battle against the current enchantment of technology and technological fads, which have worsened the ecological crisis. The connection between gadgetry abundance and planetary decline is only beginning to enter the critical curriculum of media studies, though environmental activists have been examining this relationship since the 1980s. The need for a new kind of accountancy was clear then, as activists and other researchers struggled to break the informational barrier erected by media and ICT/CE businesses. Like our imaginary accountant, media studies of the future must enact an Earth-centered ecological ethics to keep in check the managerial, human-centered tendencies of CBA that fracture a holistic understanding of the relationship of media technology to the environment. Along these lines, media studies could moderate the temptation toward preemptive conclusions by using the

precautionary principle that enabled accountants of the future to transcend conventional quantification.

At present, the limits to understanding the extent of the environmental impact of technology and cultural labor in the Global North, and hence the means to green these, are said to result from three reporting failures:

- 1 Cultural workers and consumers throw waste and byproducts into the traditional waste stream, where the items cannot be counted and are eventually lost in landfills and incinerators.
- 2 Nefarious forces hide the volume of illegally procured and traded e-waste in order to continue profiting, either through global salvage or the more benign-sounding business-to-business trade.
- 3 Government-run systems of waste control poorly educate and inform workers and consumers about depositing e-waste where it can be counted, while failing to enforce laws meant to coerce waste-producing industries to declare all items.

All three explanations are correct. They necessitate changes in the current system to place green citizenship and green governance at the center of the action. Perhaps the radically reconfigured notion of environmental accountancy and auditing we have envisioned here can provide a way for media studies to imagine its own transformative role in a future of environmentally sustainable media industries.

NOTES

- 1 The thrilling nature of accountancy has been established ethnographically, lexicographically, and rhetorically (Flowerdew & Wan, 2006), not least in Monty Python's vocational-guidance "Lion Tamer" sketch ("dull, dull, dull") with its "League for Fighting Chartered Accountancy." You don't marry such people for the ride of your life, even if they have a sense of humor like Sacramento, California accounting firm MGO, which adopted the slogan "Proud to Be Boring Accountants" in 2010 (<http://www.mgocpa.com/go/mgo/?jsessionid=EC11314641BFF963CA5F3F14BBCDE75F>).
- 2 See, for example, Jones (2010); Rahaman (2010); the websites for Critical Management (<http://www.criticalmanagement.org/>) and Critical Management Studies (<http://group.aomonline.org/cms>); the journals *Critical Perspectives on Accounting*; *Accounting, Organizations and Society*; *Accounting, Auditing and Accountability Journal*; and *International Journal of Critical Accounting*; and the currency of "technology foresight," which sought to address the problems caused by innovation (Miles, 2010). Scholarly work on environmental accounting began in the early 1990s and over the next two decades developed to include environmental danger, corporate responsibility, new relationships between industry and the environment, systems of measurement, and reporting norms that the United Nations' Division for Sustainable Development's expert working group on the topic produced, which included a comprehensive Environmental Management Accounting methodology (http://www.unep.ch/etb/areas/VRC_index.php). The US Environmental Protection

Agency (2007) offered a limited but useful guide. The International Accounting Standards Board began to pay heed (Gale, 2006; Jones, 2010), and firms appeared to provide such services (<http://www.greenaccountancy.com>). Environmental accounting is a far cry, of course, from many norms of the industry. One of us worked as a credit analyst for a major US overseas bank in the early 1980s. As part of welcoming visiting metropolitan dignitaries to the colonies, local operatives diligently crop-dusted a bar-b-cue area near a mine three days prior to their arrival to ensure they would not be inconvenienced by insect life. The environmental impact appears not to have made it into the accounts.

- 3 This section is partially based on our research published previously in Maxwell and Miller (2008a, 2008b, 2008c, 2008d, 2008e, 2009, 2011).
- 4 Sy and Tinker (2010) provide a mathematical model that can be applied to this global scale of labor.
- 5 See CEREAL (2006, 2009); Kalm (2001); Urrea (1996).
- 6 See Massey (1979); National Research Council (2005); Silicon Valley Toxics Coalition (n.d.); Grossman (2006).
- 7 See Center for Environmental Health et al. (2006); United States Department of Justice (2010); Leung et al. (2008); Basel Action Network (2005); Orisakwe and Frazzoli (2010); Chintan Environmental Research and Action Group (2009).
- 8 Of course, the new accountants were aware that it was possible to ascribe a value to the physical damage caused by exposure to toxic dust, but the cynical nature of the process sickened them. Case in point: in 2010, a US court determined that workers exposed to poisons in the ruins of the World Trade Center were worth at most about US\$81,000 apiece. The price was indexed to the loss of good health caused by the failure of government and business to provide protection to “first responders.”

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