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Chapter 2

Making Journalism Sustainable/Sustaining the Environmental Costs of Journalism

Richard Maxwell and Toby Miller

By definition, sustainability should be engaging—what could be more important than the endurance of the natural resources that allow for our very existence? But in journalism, as in life, the idea of sustainability has been besieged with misinformation; it's an idea that's just one eco-friendly lightbulb away from becoming a meaningless word used to greenwash buildings and products—along the lines of “all natural,” or “organic” (Sobel Fitts 2013)

This chapter focuses on the environmental impact of journalistic practices—yesterday and today. By this, we don't mean the metaphorical pollution caused by the digital economy burning down the paper-bound fourth estate. Rather, our aim is to provide an account of the material ecological connections between news reporting, distribution, and consumption—how the hardware and software that enable both paper- and digitally-based news and investigative journalism also contribute to global warming and other environmental harms.

With news organizations becoming content “curation and monetization companies,” as Tribune Publishing (2016) recently described itself, the medium in which journalism happens seems to matter less each day. But for eco-materialist researchers, it has always mattered—in terms of pollution, occupational health and safety, and global warming.

Despite the current transition/crisis in print, radio, and TV news reporting, unsound ecological practices continue as before. This applies to advertising-based businesses and non-profit enterprises, to print and electronic distribution systems, and to small and large-scale organizations alike. As we shall see, even the way environmental journalism is done, and environmental communication taught, ignores the ecological relationship between medium and message. If a crisis is potentially a productive as well as a destructive moment, most people involved in producing and teaching journalism have yet to catch on to either environmental risks or possibilities.

Prior to exploring this in depth, we need to look at the current crisis in the *bourgeois* media of the Global North, and how it is defined in ways that paradoxically exclude such perspectives, because they are technologically deterministic in ways that deny eco-materialist perspectives.

Contemporary discourse interprets the crisis as requiring market-based, individualistic solutions: every journalist must become an entrepreneur, a brand, a freelancer. One of the defining metaphors of the era is “sustainable journalism.”¹ This term does not refer to the environmental sustainability of journalistic practices, which we address below, but the search for sources of financial support. Recurrent clichés in this discourse, courtesy of pop-business books and academics-for-hire, include “quality journalism,” “innovation,” “the long tail,” and “new business models.” This group also invokes the more aptly named “entrepreneurial journalism,” which seeks a “sustainable future for quality journalism” rooted in market criteria of individual prosperity and business acumen.² Metaphors matter (Shoemaker 2014). And the metaphor of sustainable journalism, or sustainability, as employed rather clumsily in neoliberal projects of for-profit, entrepreneurial journalism, distracts from journalism's true environmental impact.³

No significant journalism education, practice, or revenue model accounts for the negative

environmental costs of producing news media. It's time to make this more than a footnote (McChesney 2013: 242 n. 84) or something entirely neglected even by scholars who know the political economy (Hardy 2016) or produce otherwise useful synoptic work on the present and future of the industry and its pedagogy (Fowler-Watt and Allan 2013; Hovden *et al.* 2016).⁴

We will argue that it is wrong to externalize these risks, as is currently the case; that safety of the ecosystem is as important to good journalism as a stable livelihood and physical protection; and that greening journalism's infrastructure should be as important as environmental journalism reporting on pollution. We propose researching and developing green accounting (Owen *et al.* 1997; Greenham 2010) as per the UN's System of Environmental-Economic Accounting (<http://unstats.un.org/unsd/envaccounting/seea.asp>) in order to put journalistic practices and businesses on the path towards ecological sustainability.

Contexts, Responses, and Shoddy Metaphors

For those who see themselves on the right side of history, the latest technologies are enriching rather than endangering journalism. In 2013, the *New York Times*' house technology booster, David Carr, wrote this to aspiring *anglo-parlante* chorines:

Right now, being a reporter is a golden age. There may be a lack of business models to back it up, but having AKTOCA on—All Known Thought One Click Away—on my desktop, tablet or phone makes it an immensely deeper, richer exercise than it used to be.⁵

There is great excitement over “drone journalism” and “immersive journalism” (Nuwer 2013).⁶ And in an age of “big data,” truth comes bundled in numbers that desk-bound journalists turn into graphs, which are visual and hence magically deemed superior to other forms of knowledge. The evangelism of these reporters is matched only by the faith of academic true believers (Baack 2015; Boyles and Meyer 2016).

Other utopian chorines are driven by a reactionary political economy to argue that the contemporary moment will destroy decadent, incompetent media companies, which will be displaced by earnest seekers after new business models (Braiker 2014; Brock 2013; D’Vorkin 2012).

Good luck with that one. Last we looked, the major media barons were the same as thirty years ago. And a glance around the globe at comments pages and letters to the editor on anything involving, for example, feminism, socialism, climate science, or migration reveals again and again readers prone to anti-evolutionary and anti-climate change ideology (Karlsson *et al.* 2015; Slavtcheva-Petkova 2015; Silva and Lowe 2015), rampant racism (Richardson and Franklin 2003), and conservative masculinity (Perrin 2016). The Panglossian Tom Englehardt (2014) says we are living in a “golden age of journalism” thanks to the rise of the reader as a curator of news across sources. Was he referring to the *LA Times*' “Wikitorial” innovation, which invited readers to rewrite the paper's editorials? It was closed down after less than a week of brutal, obscene contributions that arrived by the score (Mills 2005).

On the economically negative side of the ledger, digital communication platforms are seen to be storming the court of First-World public opinion, overturning the centuries-long dominance of the press in defining and debating vital issues of the day. Traditional journalism has even lost its ability to shape a counter-narrative to this story of decline. The latest cause is the social media, whose impact allegedly forces repeated lay-offs and office closures, with more and more reporters headed for the unemployment line. This reductive discourse of journalism's decline,

predicated purely on technological change, even frames how journalists themselves think about their predicament—or celebrate it. One can see why, given the sharp shocks: the US newspaper industry, for example, is 60% of the size it was twenty years ago, and digital subscriptions are worth much less money to papers than print ones (Franklin 2014).

Bob Franklin lists the principal difficulties confronting journalism in the Global North:

continuing innovations in communication technologies; the harshly competitive and fragmenting markets for audiences and advertising revenues; dramatic reductions in the entry costs of some online outlets for news; the collapse of the traditional business model to resource journalism; an expansive role for social media as sources and drivers of news; dynamic changes in government media policy; as well as shifting audience requirements for news, the ways in which it is presented and, given the expansive number of (increasingly mobile) devices on which it is received, even the places and spaces where news is produced and consumed. (2012: 663)

There is clearly a foundational weakness in a model that depends on advertising revenue for its survival. For example, it took just a decade for online communications companies to grab 75 percent of US classified advertising business from daily papers, even as the latter provided between 85 and 95 percent of original news reporting (McChesney 2013: 172–173).

Newspapers have continued to lose readers to online news and informational sites, but more slowly than expected, despite the declining costs of web access and the rapid loss of advertising revenue—though this may change as Facebook uses its surveillance practices and financial power to become a one-stop portal for what it is pleased to call “emotional contagion” (Kamps and Constine 2016; Bort 2016; Kramer *et al.* 2014). Meanwhile, the newer digital outlets that actually engage in newsgathering frequently rely on writers working for nothing, or pay them based on the number of readers they attract—a commission basis akin to being a used-car salesman, but ideologized as a bizarre partnership in which “publications grapple with how to involve their writers in building up their audiences” (Fischer 2014).⁷

Of course, we also need to relativize this talk of crisis in historical and geographical terms:

Global newspaper circulation revenues are higher than advertising revenues for the first time this century. Audiences have become publishers’ biggest source of revenue. The industry generated an estimated US\$179 billion in circulation and advertising revenue in 2014—which makes it larger than the book publishing, music or film industries. Ninety-two billion dollars came from print and digital circulation, while \$87 billion came from advertising. (World Association, 2015)

And after decades of automation across European and US newsrooms, in truth the persistence and even sometime growth in employment is a sobering counter to the received truth (Linden 2016). Meanwhile, unlike such people as Rupert Murdoch, Japan’s proprietors did not foolishly go down the Western route of making papers free on line, overturning that policy in a panic by forcing people to pay, and then reverting hysterically back again. Such people flap embarrassingly about between poles. Instead, the world’s most important news-print country continues to treat screens as supplements to what is, literally, *on* as well as *in* the paper (Villi and Hayashi 2015).

The demand for news and investigative journalism in the Global North remains strong, even

as its economic models have entered a fifteen-year (and counting) period of uncertainty. But when uncertainty reigns, risks amplify; not only to journalism as a profession, but to democratic politics, which depends on the existence of relatively autonomous investigative news media. Such entities suffered even when profits were high, because many proprietors did not regard their properties as held in public trust. Rather, they were seen as profit centers and ideological pulpits (Chakravartty and Schiller 2010; Ryan *et al.* 2015).

In response to this risky environment, new ideas about saving First World journalism have emerged. They can be grouped roughly into two camps, both of which agree there's no going back to a pre-digital economy. They might be characterized as neoliberal versus liberal-democratic approaches.

Neoliberal discourse misidentifies what its proponents see as the big gamble for practicing journalists: their survival in a world without public subsidies or other non-market options. Ironically, they don't mind taking generous donations from non-profit organizations to enable for-profit endeavors (Edmondson 2016). To a large extent, this model resonates with the wider pattern of ownership in mainstream news, where venture capitalists have bought troubled news organizations and turned them into propaganda machines supporting their political views and securing their private enrichment ... until the time comes to sell (McChesney 2013: 177–178).

By contrast, liberal-democratic approaches interpret the crisis as a weakening of the watchdog, or adversarial, function of journalism. This idea derives from political theory, which sees journalism playing a vital role by speaking truth to power, holding leaders accountable, and providing a full range of informational and cultural resources to civil society. Given this importance in securing a healthy democracy, public-revenue models form a logical rescue plan. Robert McChesney's non-market based recommendations for the US include "immediate expansion of public, community, and student media [within] a heterogeneous system, with different structures and subsidy systems, and significant non-profit competition" (2013: 201) because "the commercial system is collapsing" and producing a democratic deficit as it does so (McChesney 2016).

Advocates of the liberal-democratic approach are more numerous outside the US, in places where traditions of public subsidy, noncommercial broadcasting, and adversarial reporting have cultivated a high regard for the role of journalism in politics (Allan 2010; Hallin and Mancini 2004; Preston 2009). This is perhaps most famously the case in the Nordic countries' "media welfare state" (Søndergaard and Helles 2014; Syvertsen *et al.* 2014), though the spread of neoliberal dogma is an ever-present threat to public culture of that kind, too (Ots *et al.* 2016). It is worth noting that the level of subsidy taxpayers provide there is equivalent to the subsidy given to journalism by the US post office in the nineteenth century (McChesney 2016).

Both neoliberal and social-democratic approaches worry about a key aspect of sustainability: journalists' safety. But whereas neoliberals emphasize their survival in a dog-eat-dog market economy, the liberal-democratic interpretation of risk extends to the protection of journalists who confront physical harm, incarceration, and death, not only in war zones but in ostensibly open societies where governments and corporations are intolerant of investigative and adversarial journalism, or failed states are overtaken by organized and disorganized crime (Atarah 2016; Arroyave and Barrios 2012; Farah 2012; Committee to Protect Journalists 2014). A concern for reporters' safety resonates with the increasingly dangerous work of environmental activism (2015 saw a record number of murdered environmentalists) (On Dangerous 2016). In addition, neoliberal and liberal-democratic advocates share a concern with increasing surveillance of journalists' investigations, and threats to their sources (Carlo 2016; Zuboff 2016).

Neither of the two approaches we have outlined addresses the environmental liabilities associated with the hardware and software of journalism's infrastructure (energy and carbon emissions, for example). These are seen as external risks, not ones that threaten journalism to the same degree as lost jobs, failed revenue models, or fiscal policy.

Greening Journalism, Past and Present⁸

But there is evidence aplenty of the media's environmental impact. Their ecological legacy is carried by the Earth and its ecosystems, leaving traces of toxins that contribute to what was accepted by the world's scientific community in 2016 as the Anthropocene era (Subcommission on Quaternary Stratigraphy 2016). In what follows, we give a few examples from print and electronic media history to illustrate how to rethink journalism's ecological dimension.

Since at least the fourteenth century, papermaking has required vast amounts of clean water as a power source and ingredient. With each innovation in the chemical processing of fiber, effluents flowing into waterways increased their toxicity (Braudel 1973: 295–296; Innis 2007: 150–151; Strasser 1999). The Print Revolution inaugurated new occupational hazards in workshops that were redolent with chemically altered natural elements and process residues of fumes, dust, and heavy metals. By the mid-fifteenth century, Gutenberg's eponymous method of printing was using copper, lead, antimony, and tin. Lead is now considered a lethal element. And ink was composed of lampblack, turpentine, and boiled linseed oil—the first was harmful to the lungs and mucous membranes; the second to the nervous system, liver, and kidneys; and the third to the skin (Braudel 1973: 296; Innis 2007: 165; Eisenstein 1983: 13).

From the early 1800s, coal-burning, steam-powered presses not only multiplied the potential volume of printed pages by three to four times, but added synthetic elements to the environment. Two interrelated issues soon emerged: demand for wood pulp surpassed rags as the main source of fiber, and waste paper became a disposal problem. Things worsened with the advertising industry's requirement for “substantial amounts of paper for labels and cardboard for packaging” (Strasser 1999: 91–92; Burke 1979: 175). In the last quarter of the nineteenth century, new methods made it feasible to use wood fiber for industrial papermaking, initiating deforestation in the service of print technology and imposing grave risks on animal and plant diversity and habitats (Braudel 1973; Innis 2007).

Between 1899 and 1919, these and other innovations—such as illustrations and telegraphy—became standard. Tonnage consumption of processed wood pulp expanded by 1,175 percent in the US alone. Expenditure on print advertising grew 742 percent in the same period, fueling a “startling increase” in newspaper, book, and paperboard consumption: from 25 pounds per capita in 1909 to 59 pounds in 1930. In 1925, one New York newspaper accounted for 2,000 acres of forest (Burke 1979: 180–181, 188–190).

By 1930, papermaking had become “one of the principal industries polluting water.” Throughout the twentieth century, rising energy demands in the printing industry increased the use of coal, and new chemical processes introduced large quantities of bleaching chemicals into the environment. This produced such synthetic byproducts as dioxin. Despite new production techniques, environmental hazards for print workers remain serious. Early twenty-first century pressrooms expose workers to airborne and liquid toxins, including solvents, developing solutions, and inks, at the same time as they emit lower atmosphere ozone (smog), heavy metals in ink, solvents, silver (film development), film and paper scraps, and wastewater into the environment. The chemicals released mainly come from solvents containing toluene, methyl ethyl ketone, xylene, and trichloroethane. Exposure to them can disrupt the normal functioning

of internal organs and nervous systems in people and other animals (United States Department of Labor, n. d.).

Greenhouse gases (GHG) emitted from paper and pulp makers include carbon monoxide, nitrogen dioxide, particulate matter, sulfur dioxide, and volatile organic compounds. In some cases, these substances are released at significantly higher levels than from electronics and computer manufacturing, and in certain categories, beyond even mining and petroleum. By 2001, the US produced nearly 100 million tons of paper annually, or about 663 pounds per person. Approximately 90 percent was not recycled after use (Independent Press Association *et al.* 2001: 6; Organisation for Economic Co-Operation and Development 2001: 18). Twenty percent of newspapers are recycled or end their time in landfills without even having been read, while each book produced in the US averages four kilograms of carbon dioxide emissions—eight times its average weight (Sibley 2009; Edwards *et al.* 2009; Paper Task Force 1995: 4; Canonico *et al.* 2009). By 2009, London's newspapers and books made up 13 percent of the city's consumer carbon footprint, compared to 10 percent for consumer electronics; the energy used to produce printed newspapers was greater than watching the news on television (BioRegional and London Sustainable Development Commission 2009).

The chemical and paper industries continue to be the US's leading industrial users of water, while paper is the fourth largest emitter of toxins into waterways and industrial consumer of energy. That helps make it the fourth biggest emitter of GHG. Add to this the toxic problems of dumping paper waste into landfills, carbon emissions from the transportation of printed material, and the industry's reliance on ecologically questionable monoculture plantation forestry for virgin fiber, and you get a pretty stark picture of newsprint's negative environmental impact (Maxwell and Miller 2012).

Publishers maintain that they're addressing the issue: paper producers increased recycling from 5 percent of all fiber in 2004 to 24 percent in 2010, reduced carbon emissions by 25 percent between 2006 and 2010, and save five million trees annually. They argue for their plantation program on the ground that youthful trees absorb carbon more readily than elderly ones—but just ten percent of the paper used by publishers comes from recycled fiber (Book Industry Environmental Council and Green Press Initiative 2013).

By contrast, electronic tablets provide some apparent benefits to consumers and the environment. The convenience of downloads saves transportation costs and reduces carbon emissions from newspaper distribution and consumer travel to and from newsstands. Research suggests that a hundred titles read on a tablet pays back the planet for the damage caused through the manufacture, use, and disposal of the device—mining, energy-intensive production, recharging, and end-of-life toxic waste—though industrial secrecy makes this more guesswork than fact (Ritch 2009).

That said, the environmental costs of producing a tablet (raw materials, transport, energy, and disposal) far outweigh those of one book printed on recycled paper: the e-reader uses 33 pounds of minerals, including tantalum, versus a paper book, which uses two-thirds of a pound; 79 gallons of water versus 2 gallons; and 100 kilowatt hours of fossil fuels versus 2 hours, with proportional emissions of carbon dioxide. In addition, the health effects of exposure to internal toxins is estimated to be seventy times greater for e-readers (Moberg *et al.* 2010).

These tablets are only the latest devices emerging from electronic delivery systems. This story begins with practical applications of wireless communication that built upon experiments to describe, detect, and measure electromagnetic waves. The electromagnetic spectrum is

comprised of ionizing radiation (ultraviolet rays, X-rays, gamma rays) and nonionizing radiation (extra-low and very low frequencies; electrical power lines, radio waves, microwaves). Radio and microwave frequencies are used in all the communications media we are familiar with today—from garage-door openers and remote controls to TVs, cellphones, and satellite systems (Massey 1979).

The proliferation of electronics in the post-World War II period prompted the US Department of Defense (DoD) to fund research into the dangers of radiofrequency radiation (RFR), especially radar and other microwave communications technologies. Because the DoD program focused only on the thermal effects of RFR, it created the perception among US radiation experts that non-thermal hazards from low-level RFR did not exist. This perception continues to shape how regulators in the US respond to research that presents results showing stronger associations between harmful effects (cancer, behavioral and developmental problems, migraines...) and cellphone use, wi-fi exposure, and other sources of non-thermal RFR (Massey 1979).

Additional research has shown that important parameters of exposure to RFR include the energy level of signal generation, proximity to the signal source, RFR resonance with affected bodies (absorption rates vary among species and body sizes), pulsed versus continuous wave forms, and duration of exposure. By 1980, there was consensus about a number of adverse effects associated with radiofrequency radiation: bio-thermal damage to organisms located in close proximity to transmission towers and signal generators, which included not only media workers continuously exposed to radio, TV, and telecommunication equipment, but also office workers on top floors of buildings within range of high-power transmission antennae (National Research Council 2005: 133–137).

And earlier, with the advent of electronic television in the 1930s, the electron beams inside cathode-ray sets generated electromagnetic radiation in the X-ray portion of the spectrum, using high energy to excite cesium to create the electron cloud. The glass tubes containing the electron beams were designed to inhibit the escape of X-rays; the protective shields contained large quantities of lead in the glass (between four and eight pounds per monitor). Monochrome TVs were tested in the 1950s and 1960s for X-ray emission and found to be relatively safe. In contrast, the first generation of color-television receivers leaked so much radiation that General Electric recalled 90,000 of them in 1967. The publicity about X-ray leakage from the sets helped generate regulatory protection (Massey 1979; Cox 2009; Electronics 1967; Hayashi *et al.* 1964).

When electronic-grade silicon crystal production was refined in 1962, the ecological context of media technologies changed once again. Toxic byproducts of mining and chemical processing began to flow into the environment. High-grade silicon wafer production required 160 times more energy per kilogram than regular industrial-grade silicon. Mining raw silica, silicon, and ferrosilicon damages and pollutes the land, though it is believed to cause less harm to the environment than copper and gold mining because it doesn't employ chemical acids. Nevertheless, silicon dust can scar miners' lungs, inhibit breathing, and lead to incurable lung disease (silicosis) and susceptibility to tuberculosis and emphysema (Grossman 2006: 36–37).

Military specifications for microchips not only required that toxins be built into them, a process known as doping, but that other known biotoxins and pollutants be employed in manufacturing, emitting vast amounts of poisonous by-products into the water and air. It wasn't until the 1980s that the extent of pollution from US silicon manufacturers was disclosed—and only after hundreds of workers in Silicon Valley and people living close to semiconductor factories had developed cancer, reproductive disorders, and other illnesses (Pellow and Park

2002: 77; Grossman 2006: 37–41; Silicon Valley Toxics Coalition n. d.).

Transmission and reception towers introduced additional environmental problems. They relate to the hazards encountered through RFR. In addition, the configuration of the towers, guy wires, and transmission cables brought about changes to land use, obstruction of the flight path of migratory birds, and aesthetic alteration of landscapes. Communications towers and wires may enable journalists to record and distribute their copy, but they also kill tens of millions of birds (over two hundred species) in North America every year, and an estimated 174 million annually across Europe and the US. The problem worsens with the proliferation of ever-taller towers (Rudolph and Swan 1986; Kaufman 2011).

Satellite communication, crucial to much international reportage from sports to wars, adds at least two toxic aspects via internal nuclear power sources and fuels, along with batteries, fuel cells, and solar panels; and basic rocketry, which emits messy discharges and scrap to the electronic waste stream. A lot of “space junk” has accumulated since the launch of the first satellite in 1957. Most of it emerged in the 1980s, when the satellite industry was deregulated, commercial satellite companies proliferated, and direct-satellite broadcasting began to win customers away from cable services. A “debris belt,” predicted in the 1970s, now encircles the planet.⁹

Today’s digital age has accelerated the environmental risks of consuming news. Fifteen percent of global residential energy is spent powering domestic digital technology. If energy demand continues to grow at this rate, the residential electricity needed to power electronics will rise to 30 percent of global consumption by 2022, and 45 percent by 2030 (International Energy Agency 2009). When residential use is added to the electricity that makes and distributes these goods, the total energy consumed translates into carbon emissions that approximate to those of aviation—without accounting for the energy to make chemicals and gases that go into the production of semiconductors and the energy used to dispose of these devices or recycle them.

Mobile computing allows much more news consumption to happen outside the home, further widening the ecological footprint of journalism. Worldwide, there are now over fourteen billion networked devices that digital journalists and news organizations are trying to reach in order to boost their revenue from the digital media economy. They all need electricity to function, as does the system that enables enormous amounts of data to pass daily through massive networks and data centers—the “cloud” (Carruth 2014). Cloud computing currently eats up energy at a rate that is midway between Japan and India’s total consumption (Greenpeace 2011). The environmental impact of this networked culture depends on the type of energy production used to power the grids—coal-fired power being the biggest menace. Despite some business practices that aspire to reduce reliance on coal-fired energy, waste and thoughtless energy management remain widespread. The worst offender may be the telecommunications industry, which provides network connectivity to mobile devices; it consumes up to 90 percent of the total energy needed to transfer digital content between journalists, editors, and readers (Center for Energy Efficient Telecommunications 2013).

In sum, both paper-based and electronic media have significant environmental problems—energy consumption and emissions, materials sourcing and toxicity, and waste. As our brief historical account illustrates, they have been major polluters for a very long time without much critical attention being directed their way. That’s an odd indictment of a profession that prides itself on investigative zeal. So the question is how journalists might assess and mitigate their environmental impact.

What Can Be Done?

The first step is to determine the ecological liabilities incurred at every stage of newsgathering, investigation, reporting, publishing, reading, and recycling. Environmental accountancy shows how to internalize such costs. For example, 9.1 million trees generate the equivalent of US\$1 billion, or roughly US\$ 110.63 per tree, via services, carbon capture, or atmospheric cooling (McPherson *et al.* 2016).

A recent study provides a promising model for calculating the carbon dioxide and other GHG contained within internationally-traded goods, a measure not typically found in national statistics. The authors focused on consumption to quantify the environmental footprints (GHG and depleted land, water, and raw materials) that are traded along with the imported goods. They argue that a dependence on imported electronics from low-wage, high emission regions could “offset, or even revert, gains in efficiency and climate change mitigation actions in developed countries.” Their research demonstrates why net importers of GHG such as Norway and the US emit about twice as much CO₂ as is reported in national statistics. While regional impacts vary across consumption categories, wealthy consumer societies have the highest per capita impact on the environment, because of their imported goods and services (Ivanova *et al.* 2015). The study offers a useful model that could be extended to imported digital devices that produce news and deliver it to TVs, tablets, computers, and cellphones. Such work marks the beginning of an important turn towards greening the media. Journalism needs to stop externalizing social liabilities and look at the embodied environmental harm it causes.

There are some instances of the news media doing the right thing. The BBC, a major contributor to energy misuse thanks to its thousands of employees and global over-reach, is as adept at excoriating auto-critique on this score as any other, convening researchers, organizing studies of its footprint, and reforming policies and programs (West and Crowther 2013). The *Guardian* is one of the few newspapers that has both stimulated debate in this area (Dodd 2007) and opened itself up to public, scholarly scrutiny of its environmental impact (Wood *et al.* 2014). The newspaper has highlighted the issue of airplane travel (generally accorded responsibility for about 7% of GHG emissions, and frequently undertaken by junketeering “travel writers,” who urge readers to add frequent-polluter miles, and adrenaline-fancying “war correspondents,” who arrive in trouble spots on demand minus profound knowledge of their latest conquest. Anyone for a translator and fixer?).

The Society of Professional Journalists has made no discernible reference on line to the carbon footprint of its members since 2007.¹⁰ The National Union of Journalists adopted a policy calling for greener workplaces that same year, but shows no taste for problematizing its complicity in the problem. The International Federation of Journalists is silent on the topic. This *lacuna* is apparent even when organizations unfurl their credentials as committed to reporting climate-change science—the Project for Improved Environmental Coverage fails the test of reflexivity about its own carbon footprint. WWF India’s otherwise excellent “Recommendations on Environmental Journalism” (WWF 2009) do not address the necessity of knowing and publishing the carbon footprint of reportage, from all moments in its life cycle—mineral extraction, manufacture, transport, and consumption. And the profession’s codes of ethics need amending to address this failure.¹¹

Conclusion

Journalism studies rarely stops to ask how much journalism is enough. Advocates of neoliberal and liberal-democratic approaches agree that unbridled growth, competition, and economies of

scale are necessary. Imagine their response to a proposal to cap the number of news media outlets in order to save energy and reduce carbon emissions! The idea goes against deeply felt social standards and expectations; some might say it's downright un-American, given the First Amendment.

There is a sense of inevitability to the digital media swelling and swelling, especially since they have given millions of people a supposedly creative role via citizen journalism and other prosumer activities. Deflating the newer media would be like taking away our freedom and our future. And who is going to be in charge of deciding how much is enough, which news outlets should be stunted, and what kinds of journalism should be encouraged?

We acknowledge that this is not an easy sell to neoliberal and liberal-democratic advocates. Yet it seems untenable to claim a special status for journalistic expansion without limits.¹² If there is a basis to arguing for the reduction of questionable news formats (infotainment, junk news, advertisements for meat—take your pick), it should be derived from the principles of human rights (informational anonymity, privacy, the right to be forgotten, etc.) and environmental ones (protection of the Earth's ecosystems).

We urge journalists and news organizations to take seriously the need to cultivate an eco-ethical mode of operation—a slow journalism (Le Masurier 2016). That would help them account for the social liabilities of journalism we have outlined in this chapter—in particular, such negative environmental outcomes as harmful carbon emissions linked to the energy consumption and the waste associated with paper production, cloud computing, network operations, and electronics. We would like to see this addressed in curricular reform of journalism education around the world—starting with the dozens of programs in environmental journalism already in existence.¹³

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¹ For example, The Center for Sustainable Journalism, Kennesaw State University <http://sustainablejournalism.org/>.

² See The Graduate School of Journalism, City University of New York <https://www.journalism.cuny.edu/academics/entrepreneurial-journalism/>.

³ This metaphor is not just clumsy; it’s also propagandistic, claiming without evidence that risk naturally underpins the job market for journalists and their prospects for earning a living wage. There is no sense of political agency, historical knowledge, or awareness of international examples where collective wellbeing, public subsidy, and a supportive political economy are the norm.

⁴ McChesney argues for the importance of negative externalities in the media business.

⁵ http://www.reddit.com/r/IAmA/comments/16k598/iama_columnist_and_reporter_on_media_and_culture.

⁶ <http://www.dronejournalismmlab.org/>.

⁷ We've done this and not seen a penny. And we note that the article referenced here was written by an intern.

⁸ Remaining sections of this chapter draw in part on *Greening the Media* (Maxwell and Miller, 2012) and our monthly blog of the same name *Psychology Today*, <https://www.psychologytoday.com/blog/greening-the-media>.

⁹ By 2007, there were over 330 million pieces of debris orbiting the Earth at speeds that eroded satellite surfaces and optics and, if large enough, could puncture operational satellites. A speck of a paint chip four-hundredths of one millimeter could damage a space-shuttle window; a dot of debris one tenth of one millimeter could puncture an astronaut's protective suit. In 2009, Iridium 33 crashed into Cosmos 2251. The result was hundreds of ten-centimeter pieces of shrapnel, flying every which way at eight kilometers a second (Kessler & Cour-Palais, 1978; European Space Agency, 2007; also see the Inter-Agency Space Debris Coordination Committee, n.d. [the Committee's members include ten national space agencies and the European Space Agency]; Junk Science, 2010).

¹⁰ <http://www.google.com/cse?cx=016561358561312553625:jrlnopll9n0&q=carbon%20footprint#gsc.tab=0&gsc.q=carbon%20footprint&gsc.page=1>

¹¹ <http://www.google.com/cse?cx=016561358561312553625:jrlnopll9n0&q=carbon%20footprint#gsc.tab=0&gsc.q=carbon%20footprint&gsc.page=1>; <https://www.nuj.org.uk/news/nuj-signs-environmental-pledge/>; <https://www.google.be/search?q=site%3Aifj.org+carbon%20footprint>; <http://colombia.ifj.org/en/contents/climate-change-how-to-report-the-story-of-the-century-2>; <http://greeningthemedias.org/>; <http://www.ifj.org/about-ifj/ifj-code-of-principles/>.

¹² There has been a growing awareness of the paradoxical entanglements of journalism and the eco-crisis. See, for example, Valencia (2015) and Jönköping University's program in Sustainable Journalism, <http://ju.se/en/research/research-groups/media-and-communication-studies/sustainable-journalism.html>

¹³ See the list at the Society for Environmental Journalists' website on Education: Environmental Journalism Programs and Courses, <http://www.sej.org/library/education-environmental-journalism-programs-and-courses>.