The Future of Activism for Electronics Workers

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In the dystopian science fiction film series, *The Matrix*, intelligent machines take over a despoiled earth and exploit humans as a source of energy to power the machine world. To keep their human batteries compliant, computers create a simulated reality that looks entirely like ours, in which humans live a dream existence. The few humans who have evaded the matrix are the only people who realize that this software-generated reality is an illusion.

Like the computer world of *The Matrix*, the global electronics industry often feels like a self-replicating and constantly expanding entity, one that cannot be controlled or fully understood. The industry seems to spread too rapidly across borders to track. It seems to cloak the toxic materials it uses and its web of supply chains too darkly to trace. It appears to render its products obsolete too quickly to make them safer. It seems to control workers too much and to replace them too often for them to organize.

How can we create a more humane electronics industry, which often appears to elude the reach of governments, social movements, and even its creators? In *The Matrix* and in the real world, those who would challenge the system have to operate both within and outside it, exploiting its anomalies. But the analogy to science fiction ends here. Redeeming the real electronics industry depends not on "The One," a magical hero who can bring down the matrix, but on "The Many," who can form a global network of workers and their allies to lift themselves up.

This kind of network began to form in the 1990s. As corporate-led globalization accelerated, activists realized that they needed to develop a coordinated global response. Alarmed at the electronics industry's impact on workers and the environment, non-governmental

organizations (NGOs) began to build an international movement to share information and conduct campaigns across borders. The publication of the volume *Challenging the Chip* in 2006 helped coalesce and publicize this cross-border movement to improve health and safety conditions, environmental performance, and social justice for electronics workers and their communities. Drawing together the insights of activists and academics across North America, Europe, and Asia, the book marked the formation of a diverse coalition to "re-articulate responsibility and provide a vision of what a sustainable electronics industry can look like."[1]

The movement and its allies articulated a set of policy goals, including enforcing workers' rights to organize and monitor workplace conditions, making global supply chains transparent and independently monitored by health and safety experts, improving worker safety in each phase of products' life-cycles, mandating producer responsibility for recycling electronics to motivate brands to design safer products in the first place, and equitable distribution of the benefits and burdens of the electronics industry (see Smith and Raphael in this volume).

How can these ambitious goals be achieved? In this chapter, we review the sustainable electronics movement's strategies for change, especially industry codes of conduct; multi-stakeholder consultations that develop regulatory and legal standards for labor and health; market-based campaigns to pressure companies to change; and empowering workers to organize themselves through workplace associations to demand better wages and safer working conditions. We are mindful of the daunting challenges ahead. Yet we also see reasons for hope that a broad alliance of workers, union activists, health and safety advocates, consumers, officials, and some advocates within the industry, can create a more just and healthy future for

the people who make and dispose of the electronics we use every day. It is possible to recognize

the matrix of exploitation in which all of us are caught and the ways out of it.

A Mix of Strategies and Actors

In any given situation, workers and their advocates will need to decide whether to devote

their limited resources to some strategies rather than others, yet each may be combined into

effective campaigns for short-term and long-term change. Envisioning this kind of social change

is less like making a single road than blazing a network of paths that could lead to a common

place. We are making these paths as we go.[2]

Strengthening workers in the globalized electronics sector will depend on persuading

many interdependent actors – in industry, government, and civil society – to make and follow

these paths to a just and sustainable future. In the current multipolar global context, there are no

effective global governments, regulatory regimes, or courts to protect workers or the

environment. No single company or social movement will have the power to make change

alone. We need to develop strategies and persuade others to use them through successful

practice. The map of the way forward will also need to emerge from the grassroots experience of

workers in the developing world as much as from the organizing experience of advocates,

especially those of us in the developed world. Over the last decade, a new generation of labor,

health and safety NGOs has emerged, especially in Asia. These organizations, which are closer

to the current centers of electronics production and recycling, are the new face of the movement.

Currently, there are several competing strategies and initiatives – some led by labor and

public health NGOs, others organized by industry and governments in response to NGO-led

pressure. Many NGOs are experimenting with influencing or implementing one or more of the

following strategies, which we present in ascending order of usefulness to workers, starting with the least promising path toward improving their lives.

Industry Codes of Conduct

In response to public pressure, trade associations and several major electronics brands have developed Corporate Social Responsibility initiatives featuring codes of conduct for themselves and their suppliers. These codes typically set standards for occupational safety and health, compensation, working conditions, and environmental performance. Many of the leading electronics brands have joined with their major suppliers to form the Electronics Industry Citizenship Coalition (EICC) to pool resources to address sustainability issues throughout the supply chain. These companies have united around the vision of a "global electronics industry supply chain that consistently operates with social, environmental and economic responsibility."[3] Yet the EICC refuses to adopt the International Labor Organization's (ILO) standards for Freedom of Association and Collective Bargaining, instead making vague promises to observe local labor laws, which often are less protective of workers' rights to organize. This approach has been sharply criticized by many labor groups and NGOs.

Companies have begun to conduct audits to certify that suppliers are in compliance with these codes of conduct. Some companies conduct "first party certifications," in which firms audit themselves, while other companies carry out "second party" efforts by hiring an agent of the company to inspect and audit the supply chain. Few companies engage in "third party certification," in which fully independent actors outside the supply chain or other business relationship with the company assess and certify suppliers for meeting labor, health, and safety standards. Therefore, industry codes of conduct are voluntary forms of self-regulation.

While some corporate social responsibility efforts are little more than marketing gimmicks, rife with deceptive greenwashing and "workerwashing," we would not write off all of these efforts as mere public relations.[4] Codes of conduct are a step forward from the days when transnational corporations disavowed any responsibility for working conditions at their suppliers by claiming that transnationals had no control over, and thus no liability for, how suppliers treated their employees. In addition, if audits are published and easily available, they can increase the transparency of supply chains. As noted earlier, Apple has become the first electronics company to reveal the identities and locations of supplier factories (HP and Dell had earlier published the names of many of their suppliers but not their specific locations). This information and other performance data disclosed in audits can help NGOs and governments to monitor conditions, holding companies accountable to their own standards when the companies themselves do not.

However, there are also severe limits to the effectiveness of any self-regulatory and voluntary system. Richard Locke distinguishes two approaches that brands take to enforcing their codes of conduct. The compliance approach involves brands policing their suppliers through inspections and the implicit threat of withdrawing business, while the capability-building approach pursues improvements by offering suppliers training and technical assistance, sharing best practices in the industry, and engaging in joint problem-solving.[5]

Neither approach has motivated the industry to make significant improvements. Locke and his colleagues have studied the effects of corporate codes of conduct for over a decade, enjoying extraordinary access to internal audit reports and conducting interviews at over 120 supply chain factories in 14 countries that serve several global brands, including Hewlett-Packard. Locke found that the compliance approach may yield a few improvements in areas such

as health and safety but does not strengthen workers' freedom to organize. Often, there are too few auditors and they rely on suppliers' company records, which can be incomplete, inaccurate, or falsified. Even the brands that have invested most in audits find their suppliers in compliance with all standards only sporadically. While the capability-building approach has been more successful at improving some conditions on shop floors, it still does not address the underlying cause of problems, which are the demands that brands themselves impose on suppliers. In electronics, lightning-fast product cycles and seasonal surges in consumer demand push suppliers to impose intense work hours and forced overtime, and to add droves of temporary workers to assemble the next new device to meet product launch deadlines determined by the brand owners. In addition, brands obviously have a powerful interest in keeping suppliers' labor costs as low as possible and staving off slow-downs or strikes that would disrupt production for fickle consumer markets. As a recent study of the industry by Free2Work concludes, "[I]f suppliers are put under undue pressure, whether in regards to pricing, volume or completion time frames, workers are likely to suffer most."[6]

Therefore, it is not surprising that independent inspections by NGOs repeatedly find widespread violations throughout the supply chains of companies that audit their own suppliers. One such report identified multiple breaches in four Dell suppliers' factories, including "excessive work hours, forced overtime, below-minimum wages, verbal abuse and gender discrimination, and inadequate [occupational safety and health] conditions."[7] Similar reports have questioned whether Apple's audits have been effective at sparking improvements among its suppliers. Investigations based on interviews with workers in multiple Chinese suppliers that manufacture Apple components, not just the notorious Foxconn plants, continue to find increased exploitation of student interns and temporary workers, 70-100 hour work weeks during peak

production times, unpaid overtime to meet production quotas, inadequate protections against dust and chemicals, and an abusive workplace climate.[8] In some areas, companies are publishing misleading information, such as Apple's claim in its 2014 Supplier Responsibility Report that 99 percent of its suppliers allow workers "freedom of association," despite the fact that the only legal unions available in most Chinese electronics factories are controlled by management and/or the ruling Communist Party, which rarely involve workers in negotiating compensation or working conditions.[9] Multiple investigations conducted by the MakeITfair project find similar conditions, or worse, in Indonesia, Vietnam, and the Philippines, where many workers do not even know that the transnational brands have adopted codes of conduct that are supposed to respect employees' rights.[10] Business for Social Responsibility, a global NGO that works with a network of 250 companies, has questioned the corporate "audit/monitoring paradigm," and recognized the need for workers to "take a stronger role in asserting and protecting their own rights … through an increasingly informed and participatory workplace, with access to secure communications channels, effective means of raising and resolving disputes, and opportunities for skills development."[11]

Public pressure on electronics brands has forced brands to acknowledge their responsibility for conditions throughout the global supply chain and to practice more transparency than in the past. However, one can only trust brands and suppliers to regulate themselves if one ignores the obvious conflict of interest between their profit motives and workers' well-being. We should not expect the Foxconns to guard the hen house.

Multi-Stakeholder Certifications and Product Labels

Another set of strategies for change engages multiple stakeholders – electronics producers and recyclers, institutional purchasers, governments, unions, NGOs, public health

advocates, academia, and the like – in devising standards and certifying that they have been met. Certified companies are allowed to label their products or services as conforming to the standards. Some stakeholder initiatives primarily focus on setting labor standards, while others that encompass environmental performance and social benefits also have implications for workers. Examples include the Fair Labor Association's (FLA) code of conduct, the Green Electronics Council's EPEAT labelling system for environmentally preferable equipment, and the e-Stewards Standard for Responsible Recycling and Reuse of Electronic Equipment®.

Multi-party certifications can be preferable to company codes of conduct. Stakeholder standards are more likely to be developed and implemented by a broader range of actors who can hold producers and recyclers more accountable through independent third-party audits. For example, the e-Stewards program sets high standards for e-waste recycling and requires rigorous third-party certification by accredited auditors. Developed by the Basel Action Network, an NGO founded to support the Basel Convention's restrictions on global trade in hazardous waste, e-Stewards represents a confluence of interests between environmental health activists, recyclers who want to avoid competing with companies that use irresponsible recycling practices, and institutional customers who did not want to be associated with dumping their toxic waste abroad. Workers at e-Stewards certified recyclers benefit from safer workplaces and better compensation. The new TCO Certified initiative offers a potentially promising approach to certifying information technology products on a broad range of labor and environmental criteria, although it faces many challenges as it struggles to differentiate improved working conditions from corporate hype .[12]

However, the value and legitimacy of these certifications and product labels depends largely on the balance of power among the stakeholder participants as well as on the integrity of

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their implementation. Many NGOs have expressed concerns that too often a certification can simply be purchased or that the audits are inadequate, especially because they do not consult workers to determine whether standards are met on the ground in each facility. In the standard-setting organizations, industry members often have the most resources, the loudest voices, and the weakest commitment to workers' interests. For example, the e-Stewards initiative was founded in reaction to an unbalanced stakeholder process organized by the U.S. Environmental Protection Agency. This "Responsible Recycling" (R2) initiative aimed to establish voluntary standards for electronics recyclers in the U.S. The group was dominated by industry and trade association representatives, who voted to pilot weak standards that failed to comply with hazardous waste import laws in many developing countries and would have permitted toxic dumping in solid waste disposal facilities. After two and a half years of fruitless negotiations, environmental and labor NGOs withdrew from the discussions rather than continuing to legitimize an unequal decision-making process that resulted in inadequate protections for workers.[13]

The industry's unwillingness to share power and practice transparency has also hampered initiatives to improve working conditions in Chinese factories caught in the global media spotlight by the Foxconn suicides in 2010. At that time, Apple committed to engage the FLA to audit its suppliers and recommend improvements. Yet, several years later, Apple has made little progress. FLA reports continue to find that the majority of workers at many plants it inspects toil for more than 49 hours per week, which is the legal limit in China. A few worker representatives have been appointed to the leadership boards of unions, but not enough to challenge management's historic control of the only workplace unions in Foxconn factories. Neither Apple nor the FLA has said whether the company has met its promises to raise wages to offset reduced

hours and to offer back pay to employees who have worked unpaid overtime. Apple's pledges to allow the FLA to inspect plants run by its other major suppliers do not appear to have been fulfilled. Labor rights training programs are being offered by managers at Apple's suppliers, rather than by worker rights advocates or occupational health experts, and Apple has not disclosed the content or impact of these programs. Now that global media attention has shifted, Apple mentions the FLA in its annual report on suppliers only briefly as one of the sources of its labor standards.[14] Similar challenges have beset the Sustainable Trade Initiative (IDH), another multi-stakeholder project of electronics brands and suppliers (including Dell, HP, Philips, and Apple), NGOs, and Dutch unions, which aims to improve conditions in Chinese electronics factories by training workers to monitor workplace health and safety. [15]

These examples highlight several common challenges for stakeholder agreements to improve labor conditions. Lengthy discussions and decision-making rules in standard-setting organizations tend to result in lowest common denominator remedies. Workers, especially those in the informal sector, are rarely represented. Industry laggards, which provide the worst working conditions, can vote down improvements that industry leaders support and have already made. Some certifications do not address entire parts of the product lifecycle. For example, the EPEAT certification does not mention criteria for safer conditions in electronics production and throughout the global supply chain. Many certification systems depend on fees charged to the companies that are being audited, which gives them leverage to weaken standards and provide too little funding for enforcement. Lack of resources to conduct rigorous and ongoing audits can undermine certifiers' credibility and power to force changes. Because many industry participants tend to resist efforts to revise standards upward, labeling systems rarely offer incentives for *improving* workers' conditions over time. And a multitude of competing certifications and

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product labels – some testifying to better labor practices, others to more beneficial environmental impacts – can end up confusing consumers.[16]

If these problems can be overcome by more egalitarian governance of stakeholder processes, product certifications could be one of many necessary tools for reforming the global electronics industry. For example, artisanal, small-scale miners might improve their plight in part by organizing themselves into cooperatives and establishing a fair trade system for the minerals they supply. A similar system might be devised for the modern ragpickers who collect electronics for recycling in the developing world.[17] Fair trade systems typically establish a floor for unstable commodity prices, shielding workers from wild swings in global markets, as well as charging an additional premium to support social benefits, such as education and healthcare for workers' families. Yet there are lessons to be learned from the limits of existing trade schemes, such as the one for fair trade coffee. The governing board that sets fair trade coffee prices and standards has been dominated by Northern labeling organizations at the expense of small coffee producers in the South. While fair trade has offered small coffee growers a better deal than they would have gotten otherwise, fair trade minimum prices paid to farmers declined 41 percent in real terms between 1988 and 2008.[18] The power of certification systems to improve workers' conditions depends on democratizing standards-setting bodies and strengthening workers' ability to participate in auditing companies' compliance.

Market-Based Campaigns

Over the past decade, there has been a proliferation of NGOs and labor groups working to promote more accountability and responsibility throughout the lifecycle of the electronics sector. From mining rights to chemical production to component fabrication to final assembly, to consumer use and end of life, groups from around the world are growing in their insistence that

the major brands take more responsibility for the impacts of their business models. Some groups focus on workers' rights, others on occupational and environmental health, some on resource extraction and resource depletion, some on re-use and recycling, some on privacy and anti-competitiveness, but together they form an intricate web and are developing creative strategies to extend producer responsibility throughout the lifecycle of electronic gadgets. Sometimes these groups work together in joint strategies, sometimes independently, and sometimes at cross purposes, but there is no doubt that they will continue to grow and develop new approaches. As in many other movements, the various threads together are making an impact and to the extent that they are able to combine forces, find greater synergies, and coordinate campaigns, their combined success will continue to grow.

Over the past fifteen years, NGO activists in North America, Europe, and Asia have launched multiple market-based campaigns, which aim to mobilize consumers and shareholders to influence companies directly. [19] Activists have used several criteria to choose the targets of these campaigns. They have usually focused on the big electronics brands – Dell, Apple, HP, Samsung and the like – because they exert the greatest power over global supply chains by designing product specifications, command leading shares of their markets, and are in a position to set norms for the market as a whole. Leading electronics brands are not only the most influential industry actors, but also the most susceptible to public pressure because they are household names and therefore must cultivate reputations for cutting edge technology, social responsibility, and "cool" consumption. Few consumers have heard of Foxconn, Flextronics, and the other contract manufacturers that actually make our phones, computers, and televisions. Everyone has heard of Apple, Samsung, and Sony.

Market-based campaigns have employed a wide variety of tactics. NGO investigations have revealed the horrendous conditions and widespread occupational illnesses in many electronics plants and recycling facilities. Shareholder resolutions have forced corporate executives to address the campaign's issues at annual meetings. Activists have published sustainability score cards that rate brands on their treatment of labor and the environment, which attract media coverage and can help guide consumer decisions. Protests at consumer trade shows and corporate leaders' public appearances have grabbed the attention of companies and the news media. Documentaries and short videos circulated through social media have spread the campaign's messages online. [20] At times, activists have deployed each of these tactics to distinguish industry leaders and laggards on labor and health issues, countering arguments that improvements are impossible and pressuring bad actors to raise their standards to meet those of higher performing companies.

Many of these campaigns have been successful. For example, short-term campaigns have persuaded several brands and retailers to take back old products and recycle them, convinced companies like Dell to stop using prison labor to recycle electronics, and quelled industry opposition to local and state laws requiring manufacturers to accept their used products from consumers. Some campaigns have sparked interest among recyclers in using more responsible labor practices. Other campaigns have recruited institutional buyers to adopt green purchasing guidelines, which include provisions for safer recycling operations that pay decent wages. These campaigns have shifted public opinion, fueling debate over the unequal costs of globalization and opening up space to propose new public policy and legal strategies.

Judging from these successes, we see several criteria for effective market-based campaigns in the future. First, campaigns are more likely to succeed if they target leading brands

because they need to worry about their public image and marketing relationships with consumers, and these dominant brands can influence suppliers and competitors. Second, campaigns are most likely to succeed if they frame the issues carefully for specific audiences. This involves recruiting authoritative sources to help deliver the campaign's message (such as victims of toxic exposures and their families, epidemiological researchers and public officials), appealing to widely shared cultural values and beliefs (such as the idea that brands ought to know what chemicals are used in their own products), dramatizing the human costs of electronics (especially on workers' health), emphasizing the urgency of the problems facing workers (like cancers, birth defects, and the trauma caused by excessive overtime work), and providing a clear agenda for action to improve conditions (such as passing EPR laws, allowing workers to organize their own associations, and so on). [21]

Third, campaigns focus on mobilizing large institutional purchasers in addition to individual consumers. While consumer campaigns can help to shape public opinion, large purchasers with their substantial purchasing power can often make a significant impact on the marketplace and are often easier to reach because they are already organized in ways that individuals are not. Institutional buyers assemble at common conferences, read the trade press that caters to their profession, and make large purchases that can shape markets. Professional purchasers are typically better informed about products and less susceptible to marketing manipulation than many individual consumers. Particularly on issues where there are clear market leaders and laggards, a strategy that publicly highlights the differences can be effective in helping to tip the scales toward rewarding more responsible companies in the marketplace. Some institutions offer especially good prospects because their missions align well with advancing health and safety or because they are responsive to constituencies who are especially interested

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in these issues. For example, in the U.S. campaigns persuaded much of the health care profession to incorporate sustainable purchasing criteria by convincing the six major purchasing groups that supply most hospitals to apply their interest in public health to their buying behavior. Campaigns also mobilized student and faculty activists to persuade universities, such as the huge University of California system, to write labor and environmental standards into their procurement policies.[22] Electronics Watch, a coalition of NGOs based in Europe, has launched similar efforts aimed at European public sector purchasers, framing the issue as one of advancing global human rights in the developing world.[23]

Nonetheless, market campaigns alone are not enough. Short-term campaigns that mobilize customers to demand changes at individual companies are unlikely to transform conditions across the entire industry permanently. Most activists know this well. They deploy campaigns to force improvements at individual companies as part of a larger effort to build toward widespread and enduring change across the industry. By demonstrating that major companies can act more responsibly, and stirring public sympathy for workers, these campaigns prepare the ground for legislation and regulation to establish higher standards for the industry as a whole. This kind of change requires governments to change the balance of power in the industry by adopting and *enforcing* stronger regulations on working conditions and compensation, as well as boosting workers' capacities to organize and advocate for themselves.

Democratic Global Governance Networks

A new direction for transnational politics and policies is needed to make the globalized electronics industry fully answerable to its workers and the communities in which it operates. Governments at all levels seem incapable of protecting workers' rights alone, given that many states are too inept, corrupt or captured by short-term industry promises to provide jobs in

exchange for lax environmental, safety, and wage protections. Moreover, government regulations rarely catch up with fast-paced technological and workplace changes, much less anticipate them. As Daniele Giovannucci and Stefano Ponte write:

> In the former age of national capitalism, the achievement of market fairness was embedded in a normative framework generated by government, labor unions, and perhaps religious authority. In the current age of global capitalism, new actors such as NGOs, industry associations and public-private partnerships provide the normative framework that corporations use for social legitimacy.[24]

Many scholars have argued that policy is increasingly made and implemented not simply by governments but by *governance networks*. These networks comprise "interdependent yet autonomous actors engaged in institutionalized processes of public governance based on negotiated interactions and joint decision making."[25] Governance networks typically include traditional policy actors in industry and government, but also in NGOs, unions, academia, think tanks (public policy organizations), and so on. When these networks perform well, they allow advocates for workers to contribute their expertise and commitment to fair labor practices in policy making at all levels of government, overcoming divisions between state and civil society, and between global, national, and local governance. The Vienna statement on improving the electronics industry is a good example. These networks can also assign roles to NGOs and unions to investigate whether companies are fulfilling their promises, as the European Union did by funding the MakeITfair exposés discussed above. In short, good networks legitimize an expanded range of voices in policy formation and enlist more eyes and ears to monitor compliance.

Some accounts of governance networks idealize them as more inclusive, collaborative, and trustful than they often are. [26] Actors within these networks are not created equal. Suppression and exclusion of the voices of labor, health, and safety advocates persist. Resource limitations are often a bar to entry and meaningful participation for many workers and community activists. Therefore, their trust for industry and government participants is often fragile, as it ought to be. If the spread of governance networks is in part a response to the need for industry-wide regulation that does not depend *entirely* on governments, networks are not a form of "governing without government." [27] Lawmakers and regulators are almost always needed within networks if they are going to accomplish effective change. There is no viable replacement for government action to enforce standards of legitimacy in the workplace and marketplace. In addition, leading companies clearly recognize the need to establish a regulatory floor that protects them from being undercut by "low road" competitors. Self-regulation, stakeholder agreements, and isolated campaigns lack either the will or the muscle needed to effect long-term changes in power, and most electronics workers lack authentic unions that allow them to act collectively. We certainly would not want to participate in governance networks if they are nothing more than "vehicles for hegemonic integration" in "a new social partnership without unions."[28]

Still, there is a role for effective and democratic governance networks – of experts among NGOs, governments, and companies – to help create change in global regulatory forums, stakeholder consultations, and negotiations. In this sense, Dell is not merely shifting blame but acknowledging reality in its response to recent criticisms of its suppliers' labor practices when it says:

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> We are aware that there are challenges in the ICT supply chain and these challenges will not be addressed by any one company. We believe that the best leverage comes from our partnership with others in our industry. It will take a joint effort between industry, civil society and governments to see lasting changes in a global supply chain. [29]

The emerging global electronics governance network needs to empower NGOs to make brands prioritize their suppliers' labor standards over seasonal surges in demand or short-term shareholder interests, and to make governments elevate fair treatment of workers over job creation at any cost. All industry players need governments and NGOs to ensure their competitors act responsibly to preserve a level playing field, rather than allowing the most toxic or exploitive producers to win in the marketplace by selling cheap. In these ways, the global interconnectedness of governance networks can be greater than the sum of its parts.

Consider the interesting turn of events at Hewlett-Packard (HP) after protests against the company organized by Greenpeace in 2009. The environmental group objected to HP postponing its promise to phase out hazardous PVC plastics and brominated flame retardants from its computers and printers. Activists painted "HP = Hazardous Products" across the roof of the company's headquarters and made recorded phone calls to HP employees from William Shatner (Captain Kirk of *Star Trek*) asking them to start ridding the toxic substances from the company's equipment immediately. The protest sparked the expansion of a nascent program inside HP that was beginning to introduce environmental and human health criteria into technical specifications to complement traditional performance, cost, safety, and reliability requirements in materials selection. HP became the first electronics producer to adopt the GreenScreen for Safer Chemicals™, a rigorous approach to identifying chemicals of concern and safer alternatives, developed by the environmental health and safety NGO, Clean Production Action.[30] As the

European Union prepared to amend its directive on the restriction of hazardous substances, HP became the leading industry voice for banning brominated flame retardants and PVC from electronics equipment, joining with labor and health NGOs in opposition to much of the industry. By this time, HP had outstripped many of its competitors in eliminating these materials from its products and wanted other companies have to compete on a level playing field, rather than undercut HP's prices by using substances that HP had phased out. Electronics workers in production as well as recycling will be better off when these toxic materials are eliminated.

As this example suggests, sometimes the politics of governance networks can make strange bedfellows. It shows that NGO protests can contribute to long-term change by helping to generate support for fledgling programs within progressive companies like HP and for policies like GreenScreen. Leaders within the industry can then help legitimize broader policy changes that affect all companies, such as the EU materials phase-outs. Rather than suggesting that NGOs must give up confrontational tactics in order to participate in governance networks, this example reminds us that protest is often a necessary prelude to collaboration. It is also a reminder that labor advocates can find potential allies within companies and government agencies. Sometimes, advocates win by amplifying the voices of health and safety professionals within a corporation, who can share a closer worldview with activists than with the company's marketing, operations, and shareholder relations divisions. That shared worldview is shaped in the common conferences, research literature, and negotiations that inform a governance network. Sometimes the most successful strategies are those that incorporate an "inside/outside" approach, in which outside activists work behind the scenes with supportive employees who are sometimes in position to help make change inside the company.

One crucial task for the future is to democratize electronics governance networks. Worker advocates have been put in a subordinate position in most first-world multi-stakeholder initiatives and developing world labor-management struggles. Eva Sørensen and Jacob Torfing outline several criteria for democratic governance networks. To avoid cutting back room deals that sell out workers' interests or shift costs that should be borne by industry on to others, these networks should be accountable and transparent to legitimately elected officials (where they exist), to the constituencies that members claim to represent, and to the citizenry as a whole. In addition, networks should enact democratic rules and norms, such as broad inclusion of affected actors, fair procedures, and "agonistic respect among actors perceiving one another as legitimate adversaries rather than enemies."[31] The last criterion underscores that labor advocates need not see electronics overlords as trusted partners or necessarily embrace a spirit of compromise if it is unwarranted. Protests, strikes, litigation, and other confrontational tactics are often needed to get the powerful to bargain in earnest and share the wealth. Confrontation is most justified the more that workers are subordinated and management is unwilling to engage in deliberation over real stakes.[32] Often, it is necessary to use confrontation as a battering ram just to get the corporate doors to open.

Empowering Workers

If governance networks are best suited to negotiating top-down change – such as international health and labor standards, labor-management negotiations, trade agreements, and so on – they are unlikely to make much headway without bottom-up empowerment of workers. Many countries have ratified international labor standards and bans on trade in hazardous waste, but do not enforce them. As several of the chapters in this volume show, rather than depending exclusively on outside corporate auditors or government inspectors, we need to create a robust

role for workers in enforcing these standards and representing themselves. Electronics workers need to build independent and democratic unions that will allow them to bargain collectively with employers and the state. These unions need to coordinate their activities across borders, and up and down the supply chains of each transnational brand, to force companies to negotiate with their existing workforce, rather than moving on to exploit an even more desperate workforce proffered by an even more pliant government. Workplace health and safety committees, informed by NGOs that offer education and training on occupational health and labor rights, can help workers protect themselves from toxic substances and managerial bullying.

Several recent global developments offer glimmers of hope on the horizon for worker empowerment. The chapters in this volume about China tell the story of a new generation of young workers that is more willing to engage in strikes and protest their conditions, pushing the Chinese government and employers to raise wages and shaking up the state-controlled union. Labor rights groups, especially in Guangdong province, which is home to many electronics suppliers, have stepped forward to help workers organize and bargain, and some regional trade union federations appear to have become more engaged on workers' behalf, raising hopes that employees may be able to reclaim their unions. [33]

One of the most important electronics struggles is taking place in South Korea, where a coalition of public health and occupational safety professionals, academics, and unions has organized families of Samsung workers who have been stricken with cancer in a moving campaign for justice and accountability. Supporters for Health and Rights of People in the Semiconductor industry (SHARPS) is forcing a public re-assessment of Samsung, the most dominant electronics company in Korea, known as "the Republic of Samsung" for the disproportionate power that it wields. Activists have shown how the company ignored the plight

of its workers, most of whom fell ill with cancer in their twenties and thirties, and denied all responsibility for their illnesses, which the workers and their supporters attribute to toxic exposure on the job. Recently, a prestigious medical journal published a research article and editorial documenting the cancers. [34] Two court rulings have found that chemical exposures caused or hastened the deaths of several Samsung employees.[35] The Samsung workers' plight has been the subject of a popular feature-length dramatic film, *Another Promise*, funded entirely by small donations, and a documentary, *The Empire of Shame*.[36]

In Indonesia, unions are establishing a toe-hold in the electronics sector of the Batam Free Trade Zone. Some unions have partnered with NGOs to document safety and health problems, and train workers to protect themselves. Recognizing that the gender gap between the mainly female workforce and male union leadership has hampered organizing, unions in the electronics sector created a Women's Forum that has increased women's participation at all levels of the unions. The International Metal Workers Union has called the two local electronics unions their most successful affiliates at organizing workers in free trade zones [37]

Likewise, Vietnamese NGOs and trade unions have come together to focus on occupational health in the country's rapidly growing electronics industry. Samsung has its largest mobile phone assembly plant in the world north of Hanoi, Intel has a large plant near Ho Chi Minh City, and many Japanese brands have set up beach heads throughout Vietnam. Using research, training, advocacy, and organizing, these groups are working with employees and the government to focus attention on hazardous chemicals in production, documenting health impacts, and promoting safer substitutes and safer workplaces.

The value of sturdy and democratic unions, well-developed occupational safety and health regulations, and a supportive state can be seen in Brazil. Foxconn's factories in Brazil,

opened in 2012, "comply with the country's strict labor laws and their employees, members of

the Metalworkers Union of Jundiai, earn twice the wages of their Chinese counterparts,

participate on worker/management safety committees, and receive maternity leave, paid month-

long vacations, and other significant benefits." [38] These conditions offer a powerful contrast with

Foxconn's dismal labor record in China, demonstrating to the world that governments can play a

crucial role in requiring corporations to operate more equitably. Brazil's model is a beacon for

other newly developed countries, such as Mexico, where electronics "unions" are no more

independent than in China, and where workers' only hope of defending their interests depends on

labor NGOs like CEREAL, which has done a heroic job of negotiating workers' grievances with

companies under very difficult conditions (see Burgueño, this volume).

A recent agreement in the garment industry, in which conditions are often even worse

than in electronics, also provides a model for change. Following catastrophic fires and building

collapses that killed more than a thousand workers in Bangladesh, international unions, NGOs

and textile retailers and suppliers negotiated an agreement on fire and building safety.[39] The

Bangladesh accord is a legally binding five-year agreement that covers around a third of all

factories in the country. It mandates independent safety inspections at factories and public

reporting of the results of these inspections. Activists in the electronics sector view the accord as

a potential model for developing enforceable agreements to protect electronics workers as well.

Perhaps most encouraging of all are the growing cross-border connections that have been

established within and among several activist networks, including the Asian Network for the

Rights of Occupational and Environmental Victims (ANROEV), the European Work Hazards

Network (EWHN), and the National Council on Occupational Safety and Health (COSH) in the

U.S. [40] These networks bring together activists and workers to advance research, capacity-

building, policy and strategy development. Members conduct trainings and strategy sessions that convene workers and advocates from many countries, helping workers to learn how to recognize and protect themselves from the hazards of chemicals used in electronics, and how to advocate for safer conditions. As workers from around the world come together to discuss common challenges, they realize that they are not alone and that they are part of a common struggle. The focus on training, capacity building, and change that comes from the bottom up through the active participation of those most affected by workplace hazards are the key ingredients that unite these efforts and offer hope for the future. In the long term, these networks of workers and their advocates point the way to long-term solutions and offer the most hopeful alternative to the matrix of exploitation, discrimination, and contamination in the global electronics industry.

Notes

[1] Ted Smith, David A. Sonnenfeld, and David Naguib Pellow, "The Quest for Sustainability and Justice in a High-Tech World," in *Challenging the Chip: Labor Rights and Environmental Justice in the Global Electronics Industry*, eds. Ted Smith, David A. Sonnenfeld, and David Naguib Pellow (Philadelphia: Temple University Press, 2006), 3. On the growth of the global electronics movement, see also Leslie Byster and Ted Smith, "From Grassroots to Global: The Silicon Valley Toxics Coalition's Milestones in Building a Movement for Corporate Accountability and Sustainability in the High-Tech Industry," in *Challenging the Chip*, 111-19; Chad Raphael and Ted Smith, "Importing Extended Producer Responsibility for Electronic Equipment into the United States," in *Challenging the Chip*, 247-59.

[2] "Caminante, no hay camino. Se hace el camino al andar" ("Searcher, there is no road. We make the road by walking"). Antonio Machado, *Poesias Completas* (Madrid: Espasa-Calpe S. A., 1940), 158.

[3] Electronic Industry Citizenship Coalition, "Our Vision and Mission," accessed April 5, 2014, http://www.eicc.info/about_us.shtml.

[4] For examples of deceptive practices, see Sanjiv Pandita and Fahmi Panimbang, "Global Supply Chains: Struggle Within or Against Them?" in *Lessons for Social Change in the Global Economy: Voices from the Field*, eds. Shae Garwood, Sky Croeser, Cristalla Yakinthou (Lanham, MD: Lexington Books, 2014), 125-42.

[5] Richard M. Locke. *The Promise and Limits of Private Power: Promoting Labor Standards in a Global Economy* (Cambridge: Cambridge University Press, 2013).

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[6] Cited in Sophie Stracke, Nina Lendal, and Frederik Johannisson, *IT Workers Still Pay the Price for Cheap Computers: Case Study of Labour Conditions at 4 Dell Suppliers in China* (Copenhagen: DanWatch, 2013), accessed March 31, 2014, https://www.danwatch.dk/sites/default/files/documents/dw_kina_181013_0_0.pdf, 27.

[7] Stracke, Lendal and Johannisson, *IT Workers Still Pay the Price*, 28.

[8] Students & Scholars Against Corporate Misbehaviour, *Apple Fails in its Responsibility to Monitor Suppliers* (Mongkok, Hong Kong: Students & Scholars Against Corporate Misbehaviour, 2013), accessed March 31 2014, http://www.scribd.com/doc/127329355/2013-02-26-Apple-Fails-in-Its-Responsibility; China Labor Watch, *Apple's Unkept Promises: Cheap iPhones Come at High Costs to Chinese Workers* (New York: China Labor Watch, 2013), accessed March 31 2014, http://www.chinalaborwatch.org/pdf/apple_s_unkept_promises.pdf*;* China Labor Watch, *Chinese Workers Exploited*, *by U.S.-Owned iPhone Supplier: An Investigation at Jabil Green Point in Wuxi, China* (New York: China Labor Watch, 2013), accessed March 31, 2014, http://www.chinalaborwatch.org/pdf/Jabil_Green_Point.final.pdf*;* China Labor Watch, *Student Workers Making iPhone Must Do Unpaid Overtime and Have Wages Unfairly Deducted* (New York: China Labor Watch, 2013), accessed March 31, 2014, http://www.chinalaborwatch.org/news/new-464.html; China Labor Watch, *Investigative Report of Quanta Shanghai Manufacturing City* (New York: China Labor Watch, 2014), accessed March 31, 2014, http://www.chinalaborwatch.org/pdf/2014.02.06-Quanta_Shanghai_Manufacturing_City.pdf.

[9] Scott Nova and Isaac Shapiro, *Assessing the Reforms Portrayed by Apple's Supplier Responsibility Report* (Washington, DC: Economic Policy Institute, 2014), 4, accessed March 31, 2014, http://www.epi.org/publication/assessing-reforms-portrayed-apples-supplier/.

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[10] Marisol Sandoval and Kristina Areskog Bjurling, "Challenging Labor: Working Conditions in the Electronics Industry," in *Lessons for Social Change in the Global* Economy, 99-124.

[11] Business for Social Responsibility, *Beyond Monitoring: A New Vision for Sustainable Supply Chains* (San Francisco: Business for Social Responsibility, 2007), 5, accessed April 5, 2014, https://www.bsr.org/reports/BSR_Beyond-Monitoring-Report.pdf.

[12] "Criteria in TCO Certified," TCO Development, accessed November 18, 2014, http://tcodevelopment.com/tco-certified/.

[13] The R2 standard was completed in 2008, and has now certified over 500 recyclers and collectors in 10 countries.

[14] Nova and Shapiro, *Assessing the Reforms*, 6-7.

[15] On the IDH, see Stracke et al., *IT Workers Still Pay the Price*, 27; "Electronics," IDH, accessed November 18, 2014, http://www.idhsustainabletrade.com/electronics; "IDH Electronics Program," Elevate, accessed November 18, 2014, http://elevatelimited.com/idh/.

[16] On the problems discussed in this paragraph, see the essays gathered in Dara O'Rourke, ed., *Shopping for Good* (Cambridge, MA: MIT Press, 2012).

[17] On the role of ragpickers, see Richard Maxwell and Toby Miller, *Greening the Media* (Oxford: Oxford University Press, 2012), 101-6. For a case study on organizing informal electronics wastepickers in India, see Bharati Chaturvedi, "From Toxic to Green: Turning Mountains of E-waste into Green Jobs," in *Lessons for Social Change in the Global Economy*, 55-71.

[18] Christopher M. Bacon, "Who Decides What is Fair in Fair Trade? The Agri-Environmental Governance of Standards, Access, and Price," *The Journal of Peasant Studies* 37 (2010): 111-47.

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[19] Our discussion of campaign strategies and tactics in this section is based on David Wood and

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Raphael and Smith, "Importing Extended Producer Responsibility."

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and Lynn Zhang , *Who Pays the Price? The Human Cost of Electronics*, accessed April 11, 2014,

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[24] Daniele Giovannucci and Stefano Ponte, "Standards as a New Form of Social Contract?

Sustainability Initiatives in the Coffee Industry," *Food Policy* 30 (2005): 284.

[25] Eva Sørensen and Jacob Torfing, "Making Governance Networks Effective and Democratic

through Metagovernance," *Public Administration* 87 (2009): 237.

[26] For summaries of the literature on governance networks, see Ismael Blanco, Vivien Lowndes, and Lawrence Pratchett, "Policy Networks and Governance Networks: Towards Greater Conceptual Clarity," *Political Studies Review* 9 (2011): 297–308; Jonathan S. Davies, "Network Governance Theory: A Gramscian Critique," *Environment and Planning A* 44 (2012): 2687-704; Sørensen and Torfing, "Making Governance Networks Effective."

[27] Kevin Morgan, Gareth Rees, and Shari Garmise, "Networking for Local Economic Development," in *The New Management of British Local Governance*, ed. Gerry Stoker (Basingstoke: Macmillan, 1999), 196.

[28] Davies, "Network Governance Theory," 2696.

[29] Quoted in Stracke et al., *IT Workers Still Pay the Price*, 30.

[30] "GreenScreen for Safer Chemicals," GreenScreen, accessed November 18, 2014, http://www.greenscreenchemicals.org/.

[31] Sørensen and Torfing, "Making Governance Networks Effective," 244.

[32] Archon Fung, "Deliberation before the Revolution: Toward an Ethics of Deliberative Democracy in an Unjust World," *Political Theory* 33 (2005): 397-419.

[33] See also China Labour Bulletin, *Searching for the Union: The Workers' Movement in China 2011-13* (Kowloon, Hong Kong: China Labour Bulletin, 2014), February 20, 2014, accessed March 31, 2014, http://www.clb.org.hk/en/sites/default/files/Image/research_report/Searching%20for%20the%20 Union.pdf.

[34] Inah Kim et al., "Leukemia and Non-Hodgkin Lymphoma in Semiconductor Industry Workers in Korea," *International Journal of Occupational and Environmental Health* 18 (2012): 147-53. See also Mira Lee and Howard Waitzkin, "A Heroic Struggle to Understand the Risk of Cancers

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[40] See Asian Network for the Rights of Occupational and Environmental Victims (ANROEV),

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