Ethical Issues in Electronic Waste Disposal: Philosophical Analysis and Proposed Solutions

William I. Sauser, Jr.
Auburn University

Lane D. Sauser
Auburn University

Ronald R. Sims
College of William and Mary

In 2009 the CBS News magazine, 60 Minutes, broadcast a shocking story titled "The Wasteland." Reliable sources from the published literature confirm the basic facts of the story and raise important ethical issues regarding electronic waste (e-waste) disposal. This article poses an ethical question based on this 60 Minutes story and examines it from four philosophical viewpoints: Individualism, Utilitarianism, Justice, and Moral Rights. The authors provide their own viewpoint, discuss solutions to the problem that have been provided by others, and look at the role those in the executive suite should play to help address the e-waste disposal problem.

THE *60 MINUTES* STORY

On August 30, 2009, the CBS News investigative television magazine, *60 Minutes*, broadcast a shocking story titled "The Wasteland." The 13-minute broadcast may be viewed in its entirety at http://www.cbsnews.com/video/watch/?id4586903n. The transcript of this broadcast, "Following the Trail of Toxic E-waste," published by CBS on November 9, 2008, and updated on August 27, 2009, can be found at that same website. The story traced a container of cathode ray tubes (CRTs) from a computer recycling facility near Denver, Colorado, USA, to a town in China named Guiyu, where the CRTs had been shipped illegally. There the CRTs were being smashed, crushed, and washed in acid by unprotected peasant laborers who were extracting precious metals while being exposed to toxic chemicals in unsafe conditions. The waste from this process was being released untreated into the town's air and water supply. This broadcast and transcript are the sources for the discussion in this article.

THE FACTS

Is the CBS (2009a, 2009b) story cited above an example of sensationalistic journalism, or do the facts support the key points of the story as laid out above? Frankly, there is no shortage of information about this topic. Rather than providing here a comprehensive review of this voluminous literature, we have listed below some of the key facts related to electronic waste disposal that are attested to in such credible

sources as publications of the U.S. Environmental Protection Agency, the U.S. Government Accountability Office, and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, as well as *National Geographic Magazine*, *Smithsonian*, *Environmental Impact Assessment Review*, and *Libraries and the Academy*. Here, then, are some key facts, quoted verbatim directly from these sources:

- "More than 40 years ago, Gordon Moore, co-founder of the computer chip maker Intel, observed that computer processing power roughly doubles every two years. An unstated corollary to 'Moore's Law' is that at any given time, all the machines considered state-of-the-art are simultaneously on the verge of obsolescence." (Carroll, 2008, p. 1)

- "The electronic industry generates nearly $2 billion a year, and it's no small wonder. Americans own nearly 3 billion electronic products. For each new product that comes along, one or more becomes obsolete. Consequently, we're storing or discarding older electronic products faster than ever…. In 2005, the Environmental Protection Agency…estimates that between 26-37 million computers became obsolete…with about two-thirds of those still in working order…" (U.S. Environmental Protection Agency, 2008, p. 1)

- "Data indicates that a large majority of CRT monitors and TVs (61 percent) that were collected for recycling are exported for the purpose of producing remanufactured or refurbished TVs and CRT monitors…. Industry experts…report that about 30% of the material destined for remanufacturing abroad is not technically suitable for remanufacturing and has to be recycled or disposed. The recycling or disposal of unsuitable units occurs abroad." (U.S. Environmental Protection Agency, 2008, p. 11)

- "Disposing of e-waste in the United States is problematic because we do not have sufficient facilities or technologies currently in place to properly recycle or dispose of this material—but neither do most developing nations. Poor people and people of color experience the ramifications of improper e-waste disposal more than others because they have fewer resources and are correctly perceived as being less capable of resisting such violations." (Zazzau, 2006, pp. 103-104)

- "A PC may contain up to 4 g of gold and other valuable materials that can be recovered at a profit, particularly if the work is done in low-income countries. However, a PC also contains toxic substances such as lead, mercury, arsenic, cadmium, selenium, and hexavalent chromium." (Hilty, 2005, p. 431)

- "There are highly toxic substances in e-waste such as cadmium, mercury, and lead…. However, e-waste also contains valuable substances such as gold and copper. Recovering these metals from e-waste has become a profitable business, resulting in global, transboundary trade in e-waste. Countries such as China and India face a rapidly increasing amount of e-waste, both from domestic generation and illegal imports. For emerging economies, these material flows from waste imports not only offer a business opportunity, but also satisfy the demand for cheap second-hand electrical and electronic equipment. In addition, the lack of national regulation and/or lax enforcement of existing laws are promoting the growth of a semi-formal or informal economy in industrializing countries. An entire new economic sector is evolving around trading, repairing and recovering materials from redundant electronic devices. While it is a source of livelihood for the urban and rural poor, it often causes severe risks to humans and the local environment. Most of the participants in this sector are not aware of the risks, do not know of better practices, or have no access to investment capital to finance profitable improvements." (Widmer, Oswald-Krapf, Sinha-Khetriwal, Schnellmann, & Boni, 2005, p. 438)

- "The most prominent example of an international initiative stemming against this…is the 1989 Basel Convention…. The convention puts an onus on exporting countries to ensure that hazardous wastes are managed in an environmentally sound manner in the country of import. Apart from Afghanistan, Haiti, and the United States of America all 164 signatory countries have ratified the convention…." (Widmer et al., 2005, p. 438)

- "Because hazardous wastes pose such a potential threat to human health and the environment, one of the guiding principles of the Basel Convention is that, in order to minimize the threat, hazardous

wastes should be dealt with as close to where they are produced as possible. Therefore, under the Convention, transboundary movements of hazardous wastes…can take place only upon prior written notification by the State of export to the competent authorities of the States of import or transit (if appropriate). Each shipment of hazardous waste…must be accompanied by a movement document from the point at which a transboundary movement begins to the point of disposal. Hazardous waste shipments made without such documents are illegal." (Basel Convention, 2010, p. 1)

- "Guiyu is an established [e-waste] recycling centre, made up of many small-scale enterprises. Investigations…indicated that the growth of this industry has led to serious environmental and health impacts in the area…. The potentially hazardous recycling practices witnessed in Guiyu included the manual and unprotected removal of printer cartridge toner, the open incineration of wires to recover copper, the de-soldering of printed wiring boards, and the use of acid baths to retrieve gold and other components. Children were also seen employed in sorting plastic chips for recycling. In addition…large amounts of materials and residues were being dumped in fields, rivers, and irrigation ditches…. Due to groundwater pollution, Guiyu's drinking water has been delivered from a nearby town since approximately 1 year after the appearance of the [e-waste] industry. Further…a large proportion of the [e-waste] found in Guiyu originated in the USA, Japan and Europe." (Hicks, Dietmar, & Eugster, 2005, pp. 461-462)

- "Investigators…videotaped men, women, and children in the Chinese village of Guiyu extracting copper yokes from monitors with chisels and hammers. Squatting on the ground, they liberated chips and tossed them into plastic buckets. Black smoke rose from burning piles of wire. The workers, who wore no protective gear, reportedly swirled a mixture of hydrochloric and nitric acid—caustic, highly poisonous chemicals—in open vats, trying to extract gold from components. Afterward, they dumped the computer carcasses and the black sludge into fields and streams. Tests on the soil and water showed levels of lead, chromium and barium that were hundreds of times higher than those allowed by U.S. and European environmental health standards. The accumulating chemicals have contributed to high rates of birth defects, infant mortality, blood diseases and severe respiratory problems, according to Chinese media." (Royte, 2005, p. 2)

- "[Guiyu's e-waste] processing industry…is now more than a decade old and involves approximately 80% of the families in the area. Guiyu residents have made substantial profits from the industry, which is controlled by local family groups. Actual recycling and treatment, however, is carried out by poorly paid migrant workers from outside the area who are willing to put up with the inferior conditions and the hazards of [e-waste] processing. These workers numbered more than 100,000…. Interviews at the local hospital show that Guiyu suffers from many cases of respiratory tract infection and kidney stones, and that the incidence of these health problems is higher among migrant workers." (Hicks et al., 2005, p. 462)

- "For some people it is likely too late; a cycle of disease or disability is already in motion. In a spate of studies released last year, Chinese scientists documented the environmental plight of Guiyu…. The air near some electronics salvage operations that remain open contains the highest amounts of dioxin measured anywhere in the world. Soils are saturated with the chemical, a probable carcinogen that may disrupt endocrine and immune function. High levels of flame retardants called PBDEs—common in electronics, and potentially damaging to fetal development even at very low levels—turned up in the blood of the electronics workers…. It is next to impossible to gauge how much e-waste is still being smuggled into China, diverted into other parts of Asia, or—increasingly—dumped in West African countries like Ghana, Nigeria, and Ivory Coast." (Carroll, 2008, p. 3)

- "Some exported used electronics are handled responsibly in countries with effective regulatory controls and by companies with advanced technologies, but a substantial quantity ends up in countries where disposal practices are unsafe to workers and dangerous to the environment. Recent surveys made on behalf of the United Nations found that used electronics exported from the United States to many Asian countries are dismantled under unsafe conditions, using methods like open-air incineration and acid baths to extract metals such as copper and gold. GAO observed thousands of requests for these items on e-commerce Web sites during a 3-month period—mostly from Asian

countries such as China and India but also from some in Africa." (U.S. Government Accountability Office, 2008, p. 1)

- "Items with cathode ray tubes (CRT) are particularly harmful because they contain 4 pounds of lead, a known toxin. To prevent this practice, since January 2007 EPA began regulating the export of CRTs under its CRT rule, which requires companies to notify EPA before exporting CRTs." (U.S. Government Accountability Office, 2008, p. 1)

- "U.S. hazardous waste regulations have not deterred exports of potentially hazardous used electronics, primarily for the following reasons: *Existing EPA regulations focus only on CRTs.... Companies easily circumvent the CRT rule.... EPA's enforcement is lacking.*" (U.S. Government Accountability Office, 2008, p. 1)

- "Computers are not the only electronic hardware hounded by obsolescence. A switchover to digital high-definition television broadcasts is scheduled to be complete by 2009 [*Authors' note:* This is now in effect in the U.S.] rendering inoperable TVs that function perfectly today but receive only an analog signal. As viewers prepare for the switch, about 25 million TVs are taken out of service yearly. In the fashion-conscious mobile market, 98 million U.S. cell phones took their last call in 2005 [*Authors' note:* This was even before the advent of multiple generations of 'smart phones,' which have made hundreds of millions more mobile phones obsolete]. All told, the EPA estimates that in the U.S. that year, between 1.5 and 1.9 million tons of computers, TVs, VCRs, monitors, cell phones, and other equipment were discarded. If all sources of electronic waste are tallied, it could total 50 million tons a year worldwide...." (Carroll, 2008, p. 1) [*Authors' note:* In 2009, discarded TVs, computers, peripherals (including printers, scanners, fax machines), mice, keyboards, and cell phones totaled about 2.37 million short tons, according to the U.S. Environmental Protection Agency, 2011].

From the facts cited above, it should be crystal clear that the story presented by CBS News in the *60 Minutes* broadcast was accurate. Reliable sources indicate that large quantities of e-waste originating in the United States of America and other developed nations are being shipped—in some cases illegally—to places like Guiyu, China, where they are recycled using crude methods that expose workers and the environment to toxic substances.

THE ETHICAL QUESTION

The ethical question we seek to answer in this article is as follows: 'Is it ethical to ship (sometimes illegally) electronic waste from a wealthy developed nation—like the United States of America—to less developed areas of the world—like rural China—where it is recycled and disposed of in a manner that is harmful to workers' health and damaging to the surrounding environment?' In short, should actions like those described in the CBS (2009a, 2009b) story be allowed to occur in today's world?

PROFESSIONAL STANDARDS

Before examining this question from the perspective of several ethical viewpoints taught in American business schools we here note some of the ethical standards adopted by Information Technology specialists in the codes they have published. How do these standards apply to the *60 Minutes* story? Stamatellos (2006, pp. 125-152) shares ethical codes adopted by several important professional associations in the field of Information Technology, including those of the Association for Computing Machinery, the Institute of Electrical and Electronics Engineers, the Data Processing Management Association, and the Institute for Certification of Computing Professionals. These four important professional associations stand united in their efforts to protect the public from any harm that might result from the type of recycling efforts that appear to be in use in Guiyu. Professionals in these associations would likely be shocked with the harmful methods being used to dispose of electronic waste in the Guiyu recycling operations—and in similar crude recycling operations in other underdeveloped parts of the world: crushing, burning, and washing computer components with acid in a manner that exposes both

workers and their environment to very unsafe conditions. The operations described in the *60 Minutes* story would likely fail miserably to pass muster if inspected by any members of these professional associations. So should they be allowed to exist in the modern world? That is the question addressed in the section below. How might the philosophical guidance for making ethical decisions typically taught in American business schools help us to make a proper decision in this practical situation?

THE PHILOSOPHICAL ARGUMENTS

Not every business leader has attended college, of course, and not all who have earned college degrees majored in business. However, those who have earned degrees in business from accredited American universities have received at least an introduction to moral philosophy as it relates to business. Some have taken a course in business and society, business ethics, or classical ethics; almost all have dealt with case studies and other assignments that have ethical implications in their core business classes. In his undergraduate-level chapter on business ethics Schermerhorn (2010, p. 91) presents "four views of ethical behavior that philosophers have discussed over the years—the utilitarian, individualism, moral rights, and justice views." He states further, "depending on which perspective one adopts in a given situation, the resulting behaviors may be considered ethical or unethical" (p. 91). Here are the four views, posed in terms of the critical question one asks to determine whether or not an action is ethical:

- Individualism view—Does a decision or behavior promote one's long-term self-interests?
- Utilitarian view—Does a decision or behavior do the greatest good for the most people?
- Justice view—Does a decision or behavior show fairness and impartiality?
- Moral rights view—Does a decision or behavior maintain the fundamental rights of all human beings? (Schermerhorn, 2010, p. 91)

As Schermerhorn (2010) describes these four views in his text, it is apparent that the *individualism* and *utilitarian* views are among those aspects of "applied ethics" or "normative ethics" that Stamatellos (2006, p. 8) classifies as "consequentialist" (p. 11) in that they focus on the consequential outcomes of the decision or behavior. The *individualism* view is egoistic in nature, since it seeks to maximize long-term benefit to a single individual—the decision maker (Longenecker, McKinney, & Moore, 1988; Shaw & Barry, 2010, p. 59); the *utilitarian* view, on the other hand, seeks to produce "the greatest good for the greatest number" of people (Cavanagh, Moberg, & Velasquez, 1981, p. 365). The *justice* view, as described by Schermerhorn (2010), is a rule-based system in that it "is based on the belief that ethical decisions treat people impartially and fairly, according to legal rules and standards" (p. 92). While this system apparently equates 'ethical' with 'legal,' it does appear to offer a way to challenge the legal standards if they are deemed to be unfair with respect to 'distributive justice,' which Schermerhorn says "involves the degree to which outcomes are allocated fairly among people and without respect to individual characteristics based on ethnicity, race, gender, age or other particularistic criteria" (p. 92). As long as laws are considered distributively just, this system examines the extent to which 'procedural justice' is apparent—"the degree to which policies and rules are fairly administered" (p. 92). Finally, the *moral rights* view appears to be a Kantian or deontological view, since it "is done from a sense of duty…based on good intentions which are rationally recognized by the moral agent independently of the consequences of the action or the preferences of the agent" (Stamatellos, 2006, p. 13).

Each of these four ethical views has strengths and weaknesses, of course. For example, Schermerhorn (2010, p. 93), Shaw and Barry (2010, p. 71), and Stamatellos (2006, p. 13) all point out that the *moral rights* view must be based on non-contextual universalism, and thus is not subject to any form of cultural relativism. According to Schermerhorn, "Critics of such a universal approach claim that it is a form of **ethical imperialism**, an attempt to externally impose one's ethical standards on others" (p. 93, emphasis in the original). 'What human rights are universal,' a critic of this system might ask, 'and who gets to decide?' What is viewed as a basic human right in one culture might *not* be accepted as such in another. Some actions that produce moral outrage in one culture may simply be shrugged off in another. Given that each viewpoint has its inherent strengths and weaknesses, most business ethicists recommend the use

of a combination of all of them in a sort of mixed framework (Stanwick & Stanwick, 2009, p. 8) or hierarchical 'decision tree' approach (Cavanagh et al., 1981). Stamatellos (2006) says, "In other words, no theory will automatically make the decision for the moral agent" (p. 16).

How might each of the four ethical viewpoints described by Schermerhorn (2010)—the four to which most American business students are exposed in college—be applied to the specific situation at hand? Let us explore each in turn and see how each relates to the *60 Minutes* story.

The Individualism View: Does This Behavior Promote My Long-Term Self-Interests?

Stanwick and Stanwick (2009) classify this as a teleological viewpoint based on the philosophical writings of Plato, Thomas Hobbes, and Ayn Rand, which support a concept known as 'ethical egoism.' Their comments on this approach are as follows:

> Ethical egoism is based on the belief that every individual should act in a way to promote himself or herself if the net result will generate, on balance, positive rather than negative results…. Of course, individuals who abide by the philosophy of ethical egoism may have different interpretations of what would be considered on balance an action that is good for others as well as themselves. Some ethical egoists may argue that based on their own perceptions, all of their actions on balance generate more positive than negative benefits. This level of rationalization may evolve into the justification that pursuing a person's self- interest is necessary to generate a positive outcome for others. (Stanwick & Stanwick, 2009, p. 5)

Longenecker et al. (1988) report that this viewpoint of individualism is favored by many entrepreneurs, and they fear it is becoming more predominant among younger business professionals (Longenecker, McKinney, & Moore, 2001). Apparently the idea is that if each person looks after his or her own interests, this free competition of entrepreneurial actions will result in the best outcome for society as a whole, since the economic marketplace will sort out these actions such that the most beneficial will prevail. We cannot help but note the similarity of this perspective to Adam Smith's concept of unbridled capitalism, in which the 'invisible hand' of the marketplace guides business decisions such that they result in the best economic result for society as a whole (Smith, 1776/2003, p. 572).

From this perspective, it is likely that the business decisions and actions described in the *60 Minutes* story would be considered *ethical.* There can be little argument that the advent of the information age has been enormously beneficial in terms of communication, commerce, and entertainment worldwide, thus computers themselves are not an evil invention, nor should their manufacture be curtailed. The market for newer and faster computer hardware is huge worldwide, thus the manufacture of new equipment—which in turn makes older equipment obsolete—is ever increasing. Obsolete equipment must be disposed of somehow, and American landfills and storage facilities are filling up fast, so what is more logical than sending obsolete equipment overseas? It may be useful to people in developing nations (thus bridging the Digital Divide "between 'the poor in information' and 'the rich in information'" discussed by Stamatellos (2006, pp. 1-2), and it is a more economical means of dealing with the problem than using the very expensive (albeit much safer) computer recycling methods employed within U.S. borders. 'Those who collect and ship CRTs to other nations for recycling are actually doing far more good than harm,' persons adhering to the *individualism* view might argue.

Similarly, the entrepreneurs in Guiyu would rationalize their actions by declaring that they are providing a way to earn a living for poor peasants who would otherwise likely starve. How might they respond to the statement made by the Greenpeace guide quoted in the *60 Minutes* story (CBS, 2009a)? "Desperate people will do desperate things, but we should never put them in that situation…. It's a hell of a choice between poverty and poison. We should never make people make that choice." Their likely response: 'These people have the free will to make a choice, and they have chosen to work in the recycling operation. At least we are providing them with a way to keep themselves and their family

members from starving.' If questioned about the morality of their actions, they would likely respond, 'You are practicing ethical imperialism. The moral values of your organization—Greenpeace—do not apply in this cultural milieu.' When asked to consider the *long term* self-interests of their behavior, they would likely reply, 'My family and I will not be among those who starve, and the likelihood of our being harmed by the adverse health and environmental impacts of the recycling methods we use are minimal, since we ourselves do not touch the materials being recycled, nor do we drink the polluted water. We'll take that chance, and it's our choice.'

We cannot accept the rationalizations of this ethical viewpoint, and find ourselves in agreement with Stanwick and Stanwick (2009), who observe:

> Those who argue against ethical egoism state that part of the connection of the actions that motivate an individual also require certain obligations of an individual. Moreover, human motivation is primarily based on purely selfish factors, meaning that there should also be non-selfish factors that motivate individuals and make them unique human beings. (Stanwick & Stanwick, 2009, p. 5)

As behavioral scientists and business professors, we are all too aware of the capacity of human beings to rationalize any behavior as 'best for myself and others,' even when that behavior may have a devastating impact on others (and sometimes on oneself). Furthermore, human beings typically lack the capacity to take a long-term viewpoint, to consider rationally all the possible effects of their actions, or to defer immediate gratification for long-term gain. History has proven time and again that unbridled egoism has harmed the lives of millions. That is why there must be moral controls on business actions, imposed either voluntarily or by law (Sauser, 2008b).

The *individualism* view would not, in our opinion, provide proper moral guidance to the decision makers in this *60 Minutes* story. Instead, it would likely lead to a continuation—or even an increase—in the use of the unsafe recycling methods described in the *60 Minutes* story. (The only exception we see to this statement is if the decision makers find that the penalties for breaking the law are so high that they outweigh personal gain through profit. Under the present circumstances, it is unlikely this will happen any time soon. Besides, that would bring the *justice* view into the mix.) Thus we reject the *individualism* view as the appropriate philosophical guide for decision-making in situations like this *60 Minutes* story.

The Utilitarian View—Does This Behavior Do the Greatest Good for the Most People?

Stanwick and Stanwick (2009) trace this view to Jeremy Bentham and John Stuart Mill, and comment, "Utilitarianism is based on the principle of utility where each person's actions add to the overall utility of the community impacted by those actions. As a result, utilitarians will focus on the net result of their actions…." (p. 5). If the net impact of a business decision or action is *good* (no matter the original intent of those taking the action), then the decision or action is *ethical*, according to this viewpoint. If the net impact is *bad*, then it is *unethical*. Stanwick and Stanwick (2009) quickly pounce on the major shortcoming of this view:

> Those who oppose the utilitarian viewpoint state that it would be difficult to ever properly evaluate the effectiveness of utilitarianism because it is practically impossible to determine what would do the greatest good for the greatest number. They also argue that there will be some inherent contradictions with this theory. By stating that the actions support the greatest good for the greatest number, it begs the question whether the minority that does not receive the greatest good would be treated unfairly. (Stanwick & Stanwick, 2009, p. 5)

Furthermore, one must ask about this view of ethicality: Who *decides* what is good? Who is in the omniscient position to calculate what is the *greatest* good? How many people may be harmed, and to what extent, in order to bring about what is judged *good* for the others? Is there some mathematical

formula to help us with this decision? (Advocates of cost-benefit analysis would say there is, if we can quantify 'good' and determine with a high degree of confidence its probability of occurrence.)

From this view of ethicality, the actions and decisions in the *60 Minutes* story would likely be classified as *ethical* for many of the same reasons (rationalizations!) summarized above. There is no question that the growth of the computer industry has brought about much good across the world, and—if the worth of this good to humankind could somehow be calculated—it would likely overwhelm the cost of the harm that is being done to the workers in Guiyu and their counterparts in other developing nations. What is the net worth of potential harm to 100,000 Chinese peasants in contrast to the tremendous value to humankind resulting from the growth of the computer industry? In the absence of moral outrage, this cold and calculating approach to making business decisions would leave just about everyone in the *60 Minutes* story *helpless* to halt the crude and dangerous recycling practices taking place in Guiyu. The 'invisible hand' of the market would not stop it, and neither would those who are profiting enormously from it. (If it were not profitable, this enterprise would have dried up long ago.)

Just as we rejected the *individualism* view as a proper guide to decision-making in this circumstance, so also must we reject the *utilitarian* view as a personal guide for making an ethical decision here. While the value of the computer industry for the common good of humanity worldwide may overwhelm the cost of the harm being done to 100,000 or so Chinese, Indian, and African peasants in places like Guiyu and other poverty-stricken parts of the world, we cannot in good conscience condone these unsafe practices.

The Justice View—Does This Behavior Show Fairness and Impartiality?

Here at last we seem to be getting somewhere. Stanwick and Stanwick (2009) classify this as a deontological approach based on the social contract theories of John Locke and Jean-Jacques Rousseau. They note:

> Contractarianism holds the view that membership in society comes with certain duties and responsibilities. As a result, individuals agree to the norms of society by establishing a social contract with the other members of the society. The underlying principle of contractarianism is to have [guiding] principles that are fair to everyone. As a result, if the principles are fair, everyone in society should agree to abide by the principles. (Stanwick & Stanwick, 2009, p. 7)

In practice, of course, it is virtually impossible to determine guiding principles and establish social contracts with which *everyone* will agree, so the *justice* view often manifests itself in practice as a system of laws, rules, and regulations drawn up to reflect the prevailing norms of society, with sanctioned punishments imposed on those miscreants in society who do not abide by the prevailing norms.

Putting aside for a moment the important question of *who makes and enforces the rules*, let us consider the three aspects of justice outlined by Schermerhorn (2010) in his exposition of the justice view. He states:

> **Procedural justice** involves the degree to which policies and rules are fairly administered…. **Distributive justice** involves the degree to which outcomes are allocated fairly among people and without respect to individual characteristics based on ethnicity, race, gender, age, or other particularistic criteria…. **Interactional justice** involves the degree to which people treat one another with dignity and respect. (Schermerhorn, 2010, p. 92, emphasis in the original)

Let us consider how each of these three aspects of justice might apply as a guide for ethical behavior in this case. The concept of *procedural justice* suggests that, once a law has been adopted, it should be applied and enforced fairly in every instance. If deceiving customers about how their computers would be recycled (as the recycling company allegedly did to the people of Denver in the *60 Minutes* story) is illegal fraud, then the company should be punished. If the CRTs being shipped to China, India, and Africa

are being done so in violation of U.S. Environmental Protection Agency rules (as the U.S. Government Accountability Office, 2008, claims), then those who are doing so are breaking the law and must be punished—*if* they are caught! If China truly has laws forbidding the unsafe recycling of computers and other e-waste (as is claimed by Hicks et al., 2005), then they should be enforced in Guiyu (and elsewhere in China)—*if* the government actually can enforce them!

From the perspective of *procedural* justice, then, it appears that many of the actions occurring in the *60 Minutes* story clearly are *unethical.* Consideration of *distributive* justice and *interactional* justice concepts leads to the same conclusion: Clearly the *outcomes* of the actions in the *60 Minutes* story are not being distributed fairly—the wealthier nations and people are deriving the benefits, while those in poverty are bearing the burdens of environmental and personal harm. Likewise, it can hardly be claimed that the Chinese peasants who work in the Guiyu recycling operations are being treated with *dignity and respect* when they are not being provided safe working conditions, protective clothing, or even information about the damage to their health (and that of their unborn children) that is likely to result from exposure to toxic materials while they do this work.

From a *justice* view, then, it appears that the behavior described in the *60 Minutes* story would be considered *unethical.* Let us not be too quick to endorse this view uncritically, however; it may not be the ultimate guide to making moral decisions that it seems. Above we set aside momentarily the important question of *who makes and enforces the rules*, but now we must take it up again. The Basel Convention, for example, appears to be a clear rule prohibiting the unregulated transport of e-waste across national boundaries; after all, 164 nations signed the international treaty. However, as noted previously, the United States of America—the leading exporter of e-waste—is one of three nations (the others being Afghanistan and Haiti) that has not *ratified* the Basel Convention, thus it is not binding on U.S. exporters. While the U.S. Environmental Protection Agency did begin regulating the export of CRTs (but not other e-waste) in 2007, the U.S. Government Accountability Office (2008) claims that the EPA's enforcement of these regulations is spotty at best. Thus, while the *justice* view appears to be a solid foundation for determining that the practices occurring in the *60 Minutes* story are *unethical*, it may not always be an effective means of *stopping* those behaviors in practice. Also, if China, India, and other net importers of e-waste have weak environmental protection and worker safety laws—or if they do not enforce them stringently— crude recycling methods like those described in the *60 Minutes* story will likely continue unabated.

The Moral Rights View—Does This Behavior Maintain the Fundamental Rights of All Human Beings?

This is another deontological framework; according to Cavanagh et al. (1981) it stems from the social contract theory of John Locke and (especially) the moral philosophy of Immanuel Kant. Stanwick and Stanwick (2009) point out that Kant's concept of moral duty goes beyond mere legalism to include the idea of free will:

> Kant argued that the free will to make decisions that were considered rational needed to be converted into a universal will.... The linkage Kant made was to consider his principle pertaining to free will based on the philosophy that an individual should act in a way in which one would expect everyone to act if it were a universal will and to treat other individuals as the end, not the means to an end. (Stanwick & Stanwick, 2009, p. 7)

Stamatellos (2006) continues this line of thinking:

> A rational agent has to rely on the objective moral principles of a universal moral law and not on subjective moral principles of personal preferences. Kant states that an ethical system, in order to be effective, has to be universally true and valid for all rational agents. Thus, the 'moral law' has to be based on *a priori* and *unchanging* moral principles independent of arbitrary personal beliefs, relative cultural customs and unpredictable circumstances. (Stamatellos, 2006, p. 13)

This is certainly an appealing approach, but we must point out that the moral rights view has its own particular shortcomings. The most glaring of these is the fact that there is no universally accepted statement of human rights! Each of us may have his/her own set of beliefs about universal human rights, but how can any one of us impose his/her own beliefs on others without being accused of 'ethical imperialism?' For example, if we rely on the Golden Rule ('Do unto others as you would have them do unto you.') as a universal principle and seek to apply it to the situation in the *60 Minutes* story, we could be accused of seeking to apply Christian ethics in a non-Christian cultural context, such as the People's Republic of China—and be labeled an ethical imperialist! This would likely be the case even though the Golden Rule, or a close variant of it, appears in the religious scriptures of "all the great religions of the world" including Hinduism, Judaism, Christianity, Buddhism, Confucianism, and Islam (Shaw & Barry, 2010, p. 12).

Perhaps the closest document we have to a universally accepted statement of human rights is the Universal Declaration of Human Rights (UDHR) adopted by the United Nations General Assembly on December 10, 1948 (Bailey, 2010). Of utmost importance to the situation presented in the *60 Minutes* story, Article 23, item 1, of the Universal Declaration of Human Rights reads as follows: "Everyone has the right to work, to free choice of employment, **to just and favourable conditions of work** and to protection against unemployment" (United Nations General Assembly 1948, emphasis added). This Article, in combination with Articles 1 and 2—which assert universal rights to human dignity "without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status"—appears to add the weight of universal moral rights to the aspects of justice discussed in the section above. When taken alongside the language of the four Information Technology ethical statements cited above, it appears that the *moral rights* view provides ample guidance upon which to base a decision that the practices described in the *60 Minutes* story are *unethical* and should be discontinued.

THE AUTHORS' STANCE

It should come as no surprise that the authors of this article are morally outraged by the behavior described in the *60 Minutes* story. From the joint perspectives of the *justice* and the *moral rights* views, we believe the actions of the key parties in the story to be clearly *unethical*. If it can be proven that the recycling company did indeed knowingly ship the container of CRTs to Hong Kong—whether legally or illegally—then fraudulent and deceptive business practices are in evidence, since the citizens of Denver were told that the computers they turned in for recycling would be processed in the United States; they were not told that *any* components—including CRTs—would be sent abroad. If the container of CRTs was shipped without a permit from the U.S. Environmental Protection Agency (as does appear to be the case), then this recycling company (along with any other companies caught in the U.S. Government Accountability Office's investigation that shipped CRTs without permits) have broken U.S. law, and this also is unethical. Without question we believe the recycling operators in Guiyu have behaved unethically by exposing workers to unsafe working conditions and by harming the environment, and thus risking the health and safety of untold numbers of Chinese citizens. This is clearly counter to the concept of *sustainability*, since the practices occurring in Guiyu are very harmful to persons and the environment, and have already caused much damage (Hicks et al., 2005).

Are the governments of the United States of America and the People's Republic of China also complicit in unethical behavior? If the U.S. Environmental Protection Agency is not enforcing its own CRT exporting rule, and if the PRC is not inspecting incoming cargo properly, then yes, they are indeed. Furthermore, if China does truly have laws to protect workers involved in computer recycling but is not enforcing them, then the same charge applies—the PRC is complicit in unethical behavior. It is not enough to promulgate laws, regulations, and rules to protect the weaker members of society—these standards must also be *enforced* if justice is to prevail!

Are there not also millions of people around the world who are in some sense to blame for the tragedy taking place in Guiyu and similar sites in developing nations of Asia and Africa? Do not all *users* of

computers also bear some guilt for allowing practices like those described in the *60 Minutes* story to continue? From a moral rights perspective, we believe all computer users must become aware of the problems surrounding e-waste disposal, and become involved in finding and implementing solutions to resolve them. We—the citizens of wealthy, developed nations—are certainly enjoying the benefits of computers in the information age; should we not also be bearing our fair share of the burdens of e-waste disposal?

We return now to the specific ethical issue we are seeking to address in this article: 'Is it ethical to ship (sometimes illegally) electronic waste from a wealthy developed nation—like the United States of America—to less developed areas of the world—like rural China—where it is recycled and disposed of in a manner that is harmful to workers' health and damaging to the surrounding environment?' In short, should actions like those described in the *60 Minutes* story above be allowed to occur in today's world? Our answer is: No!

POTENTIAL SOLUTIONS

It is beyond the scope of this article to provide a detailed plan for resolving all the ethical problems raised in the *60 Minutes* story, but we would be remiss if we did not at least cite some of the solutions proposed by others. Perhaps the most comprehensive research study on this topic was conducted by Widmer et al. (2005) and published in the *Environmental Impact Assessment Review*. Widmer and colleagues examined practices in use worldwide and produced a list of possible approaches for dealing responsibly with electronic waste. Their list of approaches and examples includes product take-back programs, regulatory approaches, voluntary industry practices, and economic instruments (Widmer et al., 2005, p. 447). By choosing among these approaches—and combining them optimally in a manner tailored to meet specific needs—governments, industry partners, and consumers can build a system to reduce electronic waste, recycle it when possible, and dispose of it safely. Other excellent possible solutions have been provided by the U. S. Environmental Protection Agency (2000, 2011). Our point here is that there has been a great deal of thought put into this problem already and possible solutions are at hand—if there is enough moral will among governments, producers, recyclers, and the populace to put an effective system into operation. Consider the impact groups of consumers, in partnership with industry leaders, can have if they consciously choose how their unwanted electronic equipment is to be dealt with and demand that action.

Industry self-regulation has been defined as a regulatory process whereby an industry-level, as opposed to government- or firm-level, organization sets and enforces rules and standards relating to the conduct of firms in the industry (Gupta & Lad, 1983). Self-regulation can be effected through initiatives such as codes of conduct, reporting activities, and certification schemes (Albareda, 2008; Adobor & McMullen, 2013). Unlike industry self-regulation by firms in a specific country, global self-regulatory regimes are transnational and involve firms from different countries agreeing to a global code of conduct in all the markets in which they do business (Adobor & McMullen, 2013).

Might a concerted effort among responsible consumers and industry partners across the world lead to a possible solution? Adobor and McMullen (2013) have demonstrated the effectiveness of global voluntary industrial self-regulation and certification schemes with respect to curbing the distribution of 'conflict diamonds.' They argue that global self-regulation is preferable to imposed governmental regulation, and suggest (with due caution, of course) that self-regulation be considered in cases where powerful industrial partners—in combination with morally outraged consumers—can take global action to solve global ethical issues. This, in turn, establishes a critical role for members of the executive suite of responsible organizations (Sims, 2005; Sauser, 2008a). What must these business executives do to address ethical issues related to e-waste? We turn to that critical question in the concluding section of this article.

THE ROLE OF THE EXECUTIVE SUITE WITH RESPECT TO E-WASTE

As e-waste continues to grow, organizations and those in the executive suite will increasingly encounter problems of ethics and conduct with respect to e-waste. How can these problems be addressed when no country has jurisdiction? In many cases, like those of other global industries (for example, the diamond industry noted above), executives in the electronics industry must first commit to forming self-regulating efforts and adopt operational e-waste guidelines, codes of conduct, reporting, and perhaps other collective governance or global mechanisms. In our view, those in the executive suite should at a minimum band together to encourage the United States to ratify the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

The normative literature on collective action (Olson, 1965; Ostrom, 1990) shows that self-organized attempts at collective action are not easy, yet they may provide the most effective solutions to global ethical issues like the disposal of e-waste. Collective action efforts like the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Kimberley Process, and the Equator Principles (see Adobor & McMullen, 2013), offer best practices and guidelines which in our view are generalizable and helpful to those executives who are interested in addressing the ever growing e-waste crisis. We believe that crisis can best be addressed by those in the executive suite by taking the courageous actions offered below:

1. Assure commitment from top management for an organizational culture of ethicality related to e-waste management throughout its lifecycle (i.e. electronics manufacturing, organizational use, reuse/recycling and disposal);
2. Construct a written code of standards for behavior related to e-waste management;
3. Communicate the standards of conduct related to e-waste management effectively throughout the organization (and the industry);
4. Conduct ongoing training and education programs with respect to business ethics, sustainability, and corporate responsibility as they relate to e-waste;
5. Designate a compliance officer with clear responsibility for enforcing the e-waste standards to include ensuring that the organization regularly conducts an e-waste management audit;
6. Establish a process for reporting violations of the standards of conduct;
7. Maintain confidentiality and 'whistle blower' protection;
8. Actively investigate all reported violations regarding disposal of e-waste—in short, aggressively track the e-waste once it moves beyond the organization;
9. Ensure effective enforcement, compliance, and e-waste oversight programs;
10. Ensure due diligence and active investigation by the organization's board of directors (and industry leaders) related to e-waste management;
11. Monitor and audit electronic waste transactions; and
12. Attend carefully to the law and make certain that all e-waste actions, policies, and procedures are conducted lawfully and according to accepted industry and global standards.

As we see it, a major role of the executive suite is to integrate these ethical e-waste *best practices* into the very fiber of the organization such that employees at all levels naturally support them and live by them. This means that ethicality must be a core component of the organization's culture of character (Sauser, 2008a), and ethical disposal of e-waste must become a core value of the organization.

With respect to the case at hand, we encourage the United States of America to ratify the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. If this is beyond the political will of the nation, we recommend at a minimum enforcing effectively the CRT rule that the EPA already has in effect. The People's Republic of China (and other nations where recycling operations are located) should *at a minimum* implement safety standards for recycling workers, provide them with protective clothing and gear and inform them of the hazards of their work. Environmental standards also must be put in place and enforced such that recycling methods like those in use in Guiyu will not continue to foul the environment.

Note that we are not interested in depriving the Chinese peasants of work; we are suggesting instead that their dignity be restored and their working conditions be made safe, as the Universal Declaration of Human Rights specifies. Perhaps the c-suite executives of the computer industry and other electronics manufacturers who are profiting so greatly from the introduction of new hardware—and the consumers and organizations that are enjoying enhanced productivity and quality of life from ever more powerful computer equipment—will help finance the environmental clean-up of sites like Guiyu and provide the resources to improve the plight of the persons who work there. After all, that is the way we would like to be treated, and in our view it is the ethical and moral thing for executives who occupy the c-suite to do.

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