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# CORPORATE STEWARDSHIP

ACHIEVING SUSTAINABLE EFFECTIVENESS



# 13

## The fourth wave

### Management science and practice in the age of the Anthropocene

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Sustainability has become mainstream in both management practice and management research. Firms incorporate sustainability strategies into their core mission. University administrators promote sustainability as central to their curricula. Scholars pursue sustainability as a bona fide field of research inquiry. Given this level of attention and action, the world should be on the road to a sustainable future. But it is not. Environmental and social problems continue to get worse. This chapter presents a model for understanding the progression of punctuated social change within the market that has taken us to the present reality, moving through three waves from 1970 to the present. We then present an assessment of where we may be going in the fourth wave, a punctuated shift that is predicated on the notion that we are now living in the Anthropocene, a new geologic epoch in which human activities have a significant impact on the Earth's ecosystems. We present six elements of change within management systems that are reflected in the Anthropocene: system thinking, which leads to new forms of partnerships, materials use and supply chains, domains of corporate activity, organizations, and the economic models and metrics that are used to measure them.

## The future is already here; it's just not very evenly distributed

William Gibson

### Introduction

Over the past 50 years, the notion of corporate environmentalism (later corporate sustainability) was born, grew, and evolved. Though the history of concerns about the state of the natural environment can be traced back more than 300 years, the decade of the 1960s marks the dawn of the “modern” environmental movement. Initially focused on visible forms of air, water, solid, and even thermal and aesthetic pollution, attention grew over the next 50 years to include toxic substances, stratospheric ozone, climate change, water scarcity, ecosystem destruction, and species extinction. An even more recent evolution, triggered by the publication of the Brundtland Commission 1987 report on sustainable development, has witnessed a growing concern for income inequality, living wages, fair representation, secure retirement, transparency, and safe working conditions to round out the “triple bottom line” of the sustainability agenda: environment, equity, and economy (profit).

Today, this expanded notion of sustainability has become commonly accepted within both the academy and the corporate sector. Within the academy, what began as a modest offshoot of management science in the early 1990s has grown into a maturing area of study, one that encompasses a wide range of related disciplines (Hoffman and Bansal, 2012). Within business practice, sustainability has entered most domains of corporate activity. Corporations print annual “sustainability reports,” insert the term into press releases and CEO speeches, create new positions such as the Chief Sustainability Officer, and gather for conferences on the “sustainability challenge.” A survey by PricewaterhouseCoopers (PwC, 2005) found that 87% of Fortune 1,000 CEOs believe sustainability is important to a company’s profits.

But, in spite of the myriad of new programs under the rubric of sustainability, problems of social and environmental sustainability continue to worsen. Sustainability activities have been integrated into corporate practice without serious changes in core beliefs that underpin the root cause of the problems, such that the resultant solutions do not actually solve the core problems (Ehrenfeld, 2008; Ehrenfeld and Hoffman, 2013). If progress is to be made, it is important to look critically at the shape of corporate sustainability that is now emerging: what problems it seeks to address, what changes it entails, and what it means for the corporate organization and the market system as a whole. This next iteration in the distinctive waves of management frameworks will redefine the role of the corporation within society.

As a prelude to the coming wave, this chapter will present the evolution of sustainability strategy and practice as a process of “punctuated equilibrium” (Kuhn,

1962) passing through three waves between 1960 and the present. A fourth wave is now emerging, and glimpses of its details are visible. William Gibson's observation that, "the future is here; it's just not very evenly distributed" (Gibson, 1991) is true both for experiencing the problems of sustainability and defining key solutions by forecasting management practice and research.

## **Evidence of deterioration: the initial sustainability challenge**

The past century has witnessed unprecedented economic growth and human prosperity. World population increased by a factor of four; the world economy increased by a factor of 14; global per capita income tripled; and average life expectancy increased by almost two-thirds. In the USA alone, life expectancy rose from 47.3 to 77.3 between the years 1900 and 2002 (National Center for Health Statistics, 2004).

While these and other advances are notable, widening income disparities mean that more people do not share in the material and economic progress of the past century. According to the United Nations, the richest 20% of the world's population consume 86% of all goods and services while the poorest 20% consume just 1.3%; the richest three people in the world have assets exceeding the combined gross domestic product of the 48 least developed countries; of the 4.4 billion people in the developing world, almost 60% lack access to safe sewers, 33% do not have access to clean water, 25% lack adequate housing, and 30% have no modern health services (Crossette, 1998).

At the same time, the past century has witnessed unprecedented human impacts on the natural environment. The UN Millennium Ecosystem Assessment (2005, p. 1), a study involving more than 1,360 experts worldwide, concluded that humans have changed the Earth's ecosystems "more rapidly and extensively than in any comparable period of time in human history." Given the rate of industrial pollution to air, land, and water, the study found that, of the 24 global ecosystem services analyzed, 60% were already degraded or being used unsustainably through species extinction, over-exploitation, and ecosystem destruction.

In short, the exploitative relationship between the economy and the natural and social environments—one that was born during the Enlightenment of the 18th century, took shape in the Industrial Revolution of the 19th century, and has grown with globalization of industrial production in the 20th century—cannot be sustained.

## Sustainability as a stakeholder issue over time

Looking out from within a corporation, the sustainability problem has been framed as a continuing shift in stakeholder demands. Pressures from a wide range of institutional constituents (governments, consumers, investors, and insurance companies, as shown in Figure 13.1) translate sustainability into frameworks that are familiar and for which ready repertoires are available (Hoffman, 2000). For example, as insurance companies apply pressures on the firm, response becomes an issue of risk management. As competitors apply pressure, sustainability becomes an issue of strategic direction and market growth. With investors, it becomes an issue of capital acquisition, and so on.

Over time, sustainability has become less and less of an isolated business concern. The firm's business channels have been altered to bring environmental and social issues to managerial attention through avenues related to marketing, accounting, finance, product development, etc. For each case, firms have preexisting models and language that enable them to understand the issue and formulate a response. As these responses have become routinized, ongoing sustainability issues are treated as ordinary strategic concerns, no longer dictated by external social interests or ecosystem constraints, but rather by internal strategic norms. In the process, managers need not understand or recognize concern for the sustainability issues as something unique. This historic process of internalization and

Figure 13.1 Environmental strategy as a composite of existing business interests

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translation has not been a steady linear trend, but instead has been marked by sudden punctuated shifts that have passed through three distinct waves.

## Punctuated equilibrium and the three waves of corporate sustainability

Thomas Kuhn (1962) describes the progression of science as a series of transitions from *normal* science to *revolutionary* science. Others have applied Kuhn's model to the progression of institutional thought, describing it as following periods of punctuated equilibrium. A phase of normal science begins when a successful new theory supersedes existing, but inadequate, theories and becomes the "paradigm." Normal science then takes on the role of "mopping-up," as Kuhn calls it, or clarifying the hitherto unexplained facts by applying the paradigmatic theory. Established theories become overtaken when anomalous events arise and challenge the dominant paradigmatic theories. Conflict over the nature, meaning, and response to these events ensues, and the shift ends when a new theory is successful in providing a socially adequate response to the anomaly and becomes the basis of the new paradigm.

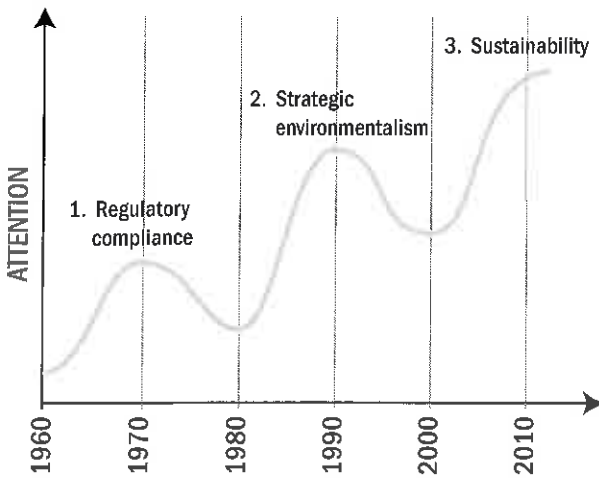
Based on this orienting structure, the history of corporate sustainability can be explained as having evolved through three "waves" of revolutionary change, shown in Figure 13.2 (Hoffman and Bansal, 2012). These waves are periods of dramatic change in values, beliefs, norms, and practices regarding the nature of our sustainability challenges. Each begins with a series of anomalous events and concludes with a new conception of the role of the corporation in addressing sustainability issues.

- **Wave 1 (1970): corporate environmentalism as regulatory compliance.** The first wave of corporate sustainability activities focuses strictly on early forms of environmental protection and occurred in the late 1960s and early 1970s (Hoffman, 2001). Its origins can be traced to the publication of *Silent Spring* (Carson, 1962), a book that challenged what Samuel Florman (1976) called the "golden age of engineering" and helped bring about a growing awareness that chemicals were damaging the environment and ultimately ourselves. Other triggering events that followed included: the initiation of the International Biological Program (1963); the formation of the Club of Rome (1968); the Santa Barbara oil spill (1969); the Cuyahoga River fire (1969); and the first Earth Day (1970).

These events created growing public and political concern over the worsening state of the environment and resulted in new regulatory agencies (most notably the Environmental Protection Agency in 1970) to arbitrate environmental rules and norms, negotiating on the one side with industry, and on the other with environmental activists. Within the corporate structure, environmental health and safety (EH&S) departments were established whose principal responsibility was maintaining relations with governmental

Figure 13.2 The three waves of corporate environmentalism, 1960–2010

Source: Hoffman and Bansal, 2012, p. 5. By permission of Oxford University Press.



agencies. Separated from the operating core of the company, these departments remained an ancillary role with low organizational power, and focused strictly on legal requirements (Hoffman, 2001).

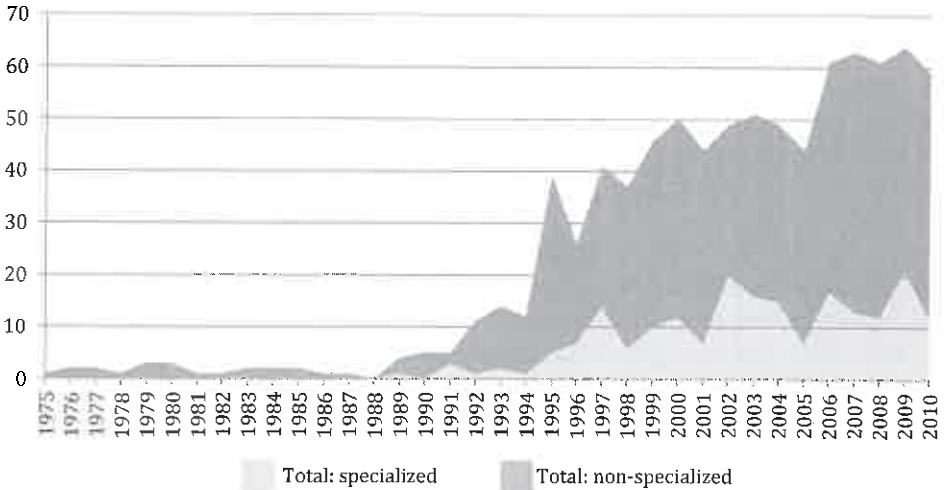
- **Wave 2 (1990): corporate environmentalism as strategic management.** The second wave occurred in the late 1980s and early 1990s and was precipitated, in part, by the 1984 accidental release of methyl isocyanate gas from the Union Carbide pesticide plant in Bhopal, India that resulted in 3,500 deaths and 300,000 injuries. This event was followed by others that included: the discovery of the Arctic ozone hole (1985); the Chernobyl nuclear disaster (1986); the Brundtland Commission report, *Our Common Future* (1987); the Montreal Protocol (1987); the formation of the Intergovernmental Panel on Climate Change (1988); the *Exxon Valdez* oil spill (1990); and the UN Conference on Environment and Development (1992).

In the wake of these events, insurers began to restructure pollution coverage, investors began to consider environmental liabilities in their portfolio, and communities began to create “right-to-know” laws. Within the corporate structure, these pressures elevated the issue to one of strategic concern. The environmental department enjoyed new levels of organizational power, and environmental considerations began to be pushed into line operations. Objectives shifted from regulatory compliance at the end of the pipe to waste minimization in product and process design.

During this second wave, attention to environmentalism (and sustainability) began to emerge within the field of management science. As shown in Figure 13.3, academic publications in the specialty area of business and the

Figure 13.3 Articles per year on business and the natural environment, 1975–2010

Source: Hoffman and Georg, 2013, p. 5.



natural environment (B&NE) (Hoffman and Georg, 2013) emerged as a body of literature in the early 1990s, and has been growing at a steady rate ever since.<sup>1</sup> While many early articles appeared within specialized B&NE journals, the number published in mainstream academic (non-specialized) increased over the decade. Overall, 73% of B&NE articles were published in mainstream journals as the issue became a legitimate empirical domain for testing and applying existing theories in the management sciences: organizational theory, operations, strategy, marketing, accounting, and finance.

- **Wave 3 (2010): corporate environmentalism as sustainability.** The third wave began around the first decade of the 21st century, propelled by a series of events that followed the creation of a global constituency for sustainable development established by the 1992 Summit of the UN Commission on Commerce and Development. No single issue drove the advent of the third wave more than climate change. The growing scientific consensus that humans have been altering the global climate through the release of

1. This emergence is marked by the first gathering of management scholars on the topic in 1989 with the Greening of Industry Network. The Organizations and the Natural Environment special interest group of the Academy of Management was formed in 1994 and specialized academic journals dedicated to the interface between managerial action and environmental protection followed: *Industrial and Environmental Crisis Quarterly* (1987), *Business Strategy & the Environment* (1992), *Organization & Environment* (1997), and the *Journal of Industrial Ecology* (1997).



greenhouse gas emissions since the Industrial Revolution has focused attention on the need to move the economy away from its foundations on fossil fuel use and material consumption.

Public and political attention was elevated due to concerns that climate change might create dramatic threats in multiple domains. For example, a 2007 report by the US Military Advisory Board warned “projected climate change poses a serious threat to America’s national security ... climate change acts as a threat multiplier for instability in some of the most volatile regions of the world” (CNA Corporation, 2007, p. 6). Others began calling for nations to maintain their economic competitiveness by developing the next generation of technologies for creating and conserving energy, food, and water. Still others warned that continued demand for increasingly scarce resources would affect previously “free” ecosystem services. The Millennium Ecosystem Assessment (2005, p. 3) warned, “Higher operating costs or reduced operating flexibility should be expected due to diminished or degraded resources (such as fresh water) or increased regulation.”

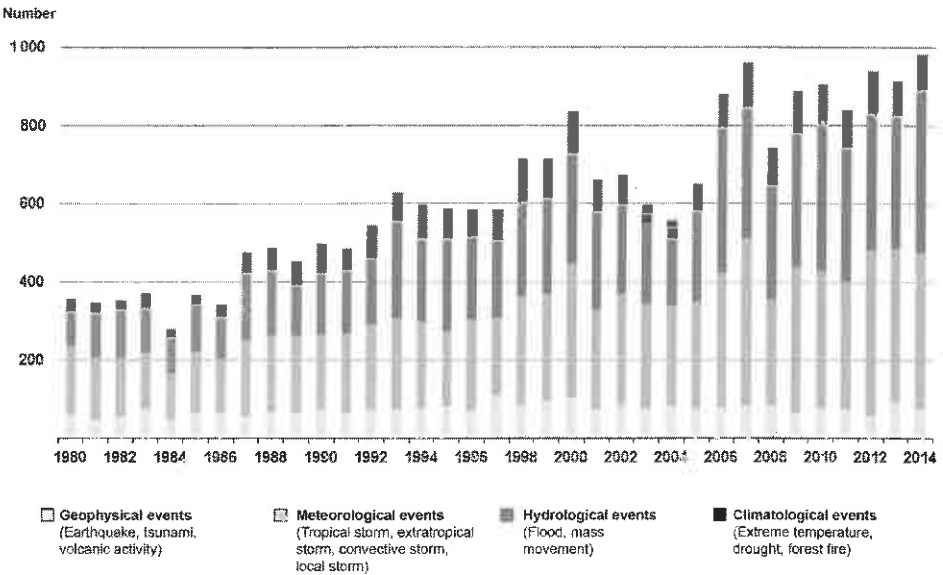
As a result of these and other stakeholder pressures, the third wave is characterized by the mainstreaming of sustainability. Firms incorporate sustainability strategies into their core mission. University administrators promote sustainability as central to their curricula. Scholars pursue sustainability as a bona fide field of research inquiry. Consumers buy sustainable products, drive sustainable cars, and stay at sustainable hotels. Indeed, sustainability is reaching into all areas of business, politics, and society. Given this level of attention and action, the world should be on the road to a sustainable future. But it is not. Problems continue to get worse.

## **Contemporary sustainability: the problem statement revisited**

We are today in the throes of a commons tragedy of global proportions. Global annual emissions of CO<sub>2</sub> rose approximately 80% from 1970 to 2004 and 2012 atmospheric concentrations of CO<sub>2</sub> far exceed the natural range of the previous 650,000 years (IPCC, 2008). The first decade of the 21st century was the hottest decade on record. As a result, extreme weather events in the USA have become both more frequent and more intense with a large decrease in the number of extreme cold waves and an increase in both extended heat waves and extreme rainfall events. The USA, and the eastern USA in particular, has experienced a significant increase in extreme precipitation events, with the greatest number of episodes taking place during the 2000s. During the 20th century, the northeast saw sea levels rise on average 1.2 inches per decade. By the end of the century, heavy downpour

Figure 13.4 Loss events worldwide, 1980–2014

Source: Munich RE, 2015. © 2015 Münchener Rückversicherungs-Gesellschaft, NatCatSERVICE.



events that occurred every 20 years on the average were happening at a frequency of every 4–15 years depending on the region (Karl *et al.*, 2009).

“Very few environmental conditions affect our economy, natural resources, or citizens’ lives more than climate. Up to one-third of the US gross domestic product is directly influenced by weather and climate” (Lubchenco, 2011). Already, worldwide natural catastrophes are reaching historic highs (see Fig. 13.4). The years 2012 and 2014 rank as the costliest for natural catastrophe insurance payouts since 1980, with a total of more than \$110 billion in damages in 2012 (NOAA, 2013).<sup>2</sup> Pollution in some cities in China has already reached levels that are 40 times the level that the World Health Organization deems safe. As a result, the National Academy of Sciences estimates life expectancy to be shortened by five and a half years, and the World Bank estimates a reduction in GDP by 9% (Economist, 2013).

Beyond these environmental issues we are also facing tremendous social problems, most notably in income inequality. US Census data for 2010 shows the widest income gap between rich and poor on record. In 1968, the top 20% of Americans had about seven times the income of those living below the poverty line. By 2008, that disparity had grown to about 13. By 2010, it had grown to more than 14 (Ehrenfeld and Hoffman, 2013). This has contributed to public protests in the name of the Tea Party and the Occupy Wall Street movement (and globally, the Arab Spring); all

2 The 2012 total damages rank only behind 2005, which incurred \$160 billion in damages due in part to four devastating land-falling hurricanes.

borne out of the concern that the institutions of society are no longer adequate or fair for managing society.

Overall, this social and environmental data points to the inescapable conclusion that the third wave has not been able to address the root issues of sustainability. Whatever Kuhnian shifts have occurred are insufficient to cope with the problems we have been facing for decades. We can identify several reasons why this is so.

First, the central tenet of the economic models used to devise public policy and business strategies in the third wave has been eco-efficiency, which fails to account for, or address the root causes of, unsustainability. While efficiency can drive both competition and growth, it does not lead to any form of balance within the limits of natural and social systems. Eco-efficiency, in system dynamics terms, is a “fix that fails.” There simply is not an infinite supply of resources on Earth to allow for continuous growth in material terms; and certainly not if growth adds to, rather than reduces, inequality.

A second issue is that sustainability occurs at the global systems scale but eco-efficiency is an uncoordinated, local strategy. So anything that companies do within their sustainability strategies in the third wave is incremental and uncoordinated. They fit sustainability within their standard repertoires; repertoires that do not actually address the underlying causes of unsustainability. The rules of the game have remained largely unchanged in the face of observations that demand that they change.

This leads to a third and critically important failure in third-wave solutions. Corporate sustainability actions thus far have focused on *reducing unsustainability*, which is fundamentally different than *creating sustainability* (Ehrenfeld, 2008). The efforts of the triple bottom line are, in fact, not designed to solve the problem as it really exists. They stand merely as a Band-Aid to deep systemic failures in the market system. Here is an analogous example. The USA fought a war in Iraq that eventually stopped. Now we’re still there trying to create some kind of stable, lasting peace. Stopping the war and creating peace are different activities. These seemingly related concepts are based on different paradigms. So, while current activities are important for slowing the velocity at which we are approaching a system collapse, they are little more than a call to protect the status quo, that is, maintaining the fundamental paradigm of a liberal, free-market economy that sheds the externalities (the unseen, unintended consequences of the economy) tied up with the goods and services that are consumed. Therefore, what goes for sustainability today does not and cannot address the underlying problem context. Without a correction that recognizes that the economy is embedded within complex environmental and social systems, present-day sustainability “solutions” will continue to be ineffective.

## The fourth wave: managing in the Anthropocene

To fully capture the severity of the impact that market economy is having on the natural environment, we must come to terms with the notion that we are now living in the Anthropocene, a new geologic epoch in which we cannot talk about the Earth's ecosystems without recognizing the human role in altering them (Crutzen and Stoermer, 2000). Becoming more and more widely used, the notion forces us to acknowledge that we, as a species, have grown to such numbers, and our technology has grown to such power, that we are altering the ecosystem on a planetary scale. The Anthropocene began with the Industrial Revolution of the 18th century, but became more acute in what is called the Great Acceleration around 1950 onward (Steffen, Crutzen, and McNeil, 2007). The epoch is marked by the reality that "Human activity has transformed between a third and a half of the land surface of the planet; Many of the world's major rivers have been dammed or diverted; Fertilizer plants produce more nitrogen than is fixed naturally by all terrestrial ecosystems; Humans use more than half of the world's readily accessible freshwater runoff" (Crutzen, 2002, p. 23). We can even measure our impact on the environment through the pervasive presence of man-made chemicals—there are measurable levels of ibuprofen in the Mediterranean Sea, and scientists worry about the impact of growing levels of birth control pills and antidepressants on aquatic ecosystems and municipal drinking water supplies. Recognizing our dominant role in the Earth's systems forces a change in societal views of both the ecosystem and the human place within it leading to the fourth wave; a cultural shift akin to the Enlightenment of the 17th and 18th centuries.

The Enlightenment marked a period in which knowledge was advanced through the scientific method rather than tradition, superstition, and religion. The Enlightenment, following the work of Adam Smith, created the concept of the market that has served as the fundamental organizing principle of the liberal economy and continues to be the foundational framework for business. Today, this framework has brought us the economy that was described at the beginning of this chapter and the problems that were similarly described. Sustainability in the Anthropocene is a fundamentally different challenge than pollution control of the 1970s, 1980s and 1990s. And that challenge forces an alteration in both the market, which acts as our collective institution for engaging with the environment, and the idea of corporate management within it. In the face of such change, the idea of the market will survive, but the rules that govern the underlying social contract that legitimates the business sector will change.

The fourth wave is a departure from that dominant model, recognizing that we are dealing with an impact on the environment that goes far beyond our standard notions of environmental insults and differentiated social impacts. Using the "full world" metaphor of Herman Daly (2005), we cannot any longer ignore our connections to the Earth and to all life on the planet. Climate change, droughts, increasing food prices, water scarcity, social unrest, income inequality: these are all the