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Renewing Business History in the Era of the Anthropocene

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This special issue is concerned with new approaches in business history to exploration of the role of business in both creating and addressing the mounting environmental crisis that has become apparent over the last half century. Two decades have passed since *Business History Review* published a pioneering special issue on business and the natural environment. The guest editors of that issue, Christine Rosen and Christopher Sellers, called for an “ecocultural approach” to business history and noted that strikingly little attention had been given to the issue of business and the natural environment in the field.¹

The call for more research did not go unanswered. It is no longer accurate to claim that business (or other) historians have wholly overlooked the fact that business has been engaged in resource depletion, energy use, hazardous emissions, and waste generation, or has sometimes adopted strategies to mitigate environmental impacts. A significant, if still limited, literature has addressed the topic from multiple

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¹ Christine Meisner Rosen and Christopher C. Sellers, “The Nature of the Firm: Towards an Ecocultural History of Business,” *Business History Review* 73, no. 4 (1999): 577–600. They urge business historians to draw on terms and modes of analysis that evolved in the field of environmental history and argue that business historians have an opportunity to develop the environmental history enterprise.

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perspectives.² Geoffrey Jones's book *Profits and Sustainability*, published in 2017, provided a new landmark for business historians by giving the first historical synthesis about the rise of green industries and the entrepreneurial endeavors to create markets for greener products and services since the middle of the nineteenth century.³

Yet the attention given so far to the subject in business history has only revealed the tip of an iceberg. A great deal has happened between the “environmental awakening” of the 1960s and the mainstreaming of business sustainability in the twenty-first century—all set against the backdrop of an escalating climate crisis.⁴ In 2000, Nobel Prize winner Paul Crutzen and his colleague Eugene F. Stoermer suggested that the Industrial Revolution was a key moment not only in human history, but also in planetary history. They argued that the human impact on the global environment had pushed Earth into a new geological epoch—the Anthropocene—caused by accumulated human impact on Earth's geology and ecosystems.⁵

² Hartmut Berghoff and Adam Rome, *Green Capitalism? Business and the Environment in the Twentieth Century* (Philadelphia, 2017). The volume contains chapters by both business and environmental historians. Guest editorials in special issues include Christine Meisner Rosen, “Doing Business History in the Age of Global Climate Change,” *Enterprise & Society* 8, no. 2 (2007): 221–26; Hartmut Berghoff and Mathias Mutz “Missing Links? Business History and Environmental Change,” *Jahrbuch für Wirtschaftsgeschichte/Economic History Yearbook* 59, no. 2 (2009): 9–22; Franck Aggeri and Mélodie Cartel, “Le changement climatique et les entreprises: Enjeux, espaces d'action, régulations internationales,” *Entreprises et Histoire* 1, no 86 (2017): 6–20; and Andrew Smith and Kirsten Geer, “Uniting Business History and Global Environmental History,” *Business History* 59, no. 7 (2017): 987–1009. Articles published in *Business History Review* since the last special issue include Keetie Sluyterman, “Royal Dutch Shell: Company Strategies for Dealing with Environmental Issues,” *Business History Review* 84, no. 2 (2010): 203–26; Ann-Kristin Bergquist and Kristina Söderholm, “Green Innovation Systems in Swedish Industry, 1960–1989,” *Business History Review* 85, no. 4 (2011): 677–98; and Ann-Kristin Bergquist and Magnus Lindmark, “Sustainability and Shared Value in the Interwar Swedish Copper Industry,” *Business History Review* 90, no. 2 (2016): 197–225.

³ Geoffrey Jones, *Profits and Sustainability: A History of Green Entrepreneurship* (Oxford, 2017). See also Geoffrey Jones, *Varieties of Green Business: Industries, Nations and Time* (Northampton, MA, 2018);

⁴ See, for example, Andrew J. Hoffman, *From Heresy to Dogma: An Institutional History of Corporate Environmentalism* (San Francisco, 1997); “The Next Phase of Business Sustainability,” *Stanford Social Innovation Review*, Spring 2018; John R. Ehrenfeld, “Beyond the Brave New World: Business and Sustainability,” in *The Oxford Handbook of Business and the Natural Environment*, ed. Pratima Bansal and Andrew J. Hoffman (Oxford, 2012), 611–29; and Jones, *Profits*.

⁵ Paul Crutzen and Eugene F. Stoermer, “The Anthropocene,” *Global Change Newsletter* 41 (2000): 17–18. In 2016, scientists agreed at the International Geological Congress in Cape Town, South Africa, that the Anthropocene should be officially declared. See Jan Zalasiewicz, Colin N. Wasters, Colin P. Summerhayes, Alexander P. Wolfe, Antony D. Barnosky, Alejandro Cearreta, Paul Crutzen, et al., “The Working Group on the Anthropocene: Summary of Evidence and Interim Recommendations,” *Anthropocene* 19 (Sept. 2017): 55–60. The Anthropocene ranks among the most ambitious scientific programs of the past fifteen or twenty years, but the exact date at which the Anthropocene starts has been, and still is, debated.

Although the expansion of fossil fuel-based industrial capitalism in the nineteenth and early twentieth centuries gave rise to critical concerns about air and water pollution, deforestation, and other issues, the human impact on the environment after 1945 was unprecedented.⁶ The rate of measured human impact increased so dramatically that the period from 1945 to the present has been described as the “Great Acceleration,” representing a second stage of the Anthropocene, with exponential growth in the rate of fossil energy use and population growth as its central features.⁷ These are profound issues that not only concern climate scientists, geologists, and environmental historians, but also get to the very core of the subject of business history, since business has been a central actor behind the development.⁸ However, business history literature has essentially remained focused on how firms grew and innovated, without mentioning that they wrecked the planet as a result.⁹

The Industrial Revolution and creation of modern capitalism is basically a story of manufacturing firms growing large by employing enormous amounts of coal and, later, oil.¹⁰ Alfred Chandler was the first business historian to both explain and raise concerns about how the organization of modern industrial enterprise had coevolved with the use of fossil energy, which had locked business and the whole world economy into a growth path that could not be sustained. In an almost entirely overlooked article published in the *Bulletin of the American Academy of Arts and Science* in 1980, Chandler argued that it was time to begin to return to the use of renewable energy sources that were used before the First Industrial Revolution—sun, wind, and water—and urged historians and

⁶ The first stage of the Anthropocene is commonly linked to the Industrial Revolution in England. See, for example, Will Steffen, Paul J. Crutzen, and John R. McNeill, “The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?,” *Ambio* 36, no. 8 (2007): 614–21; Will Steffen, Katherine Richardson, Johan Rockström, Sarah E. Cornell, Ingo Fetzer, Elena M. Bennett, Reinette Biggs, et al., “Planetary Boundaries: Guiding Human Development on a Changing Planet,” *Science* 347, no. 6223 (13 Feb. 2015).

⁷ John R. McNeill and Peter Engelke, *The Great Acceleration: An Environmental History of the Anthropocene since 1945* (Cambridge, MA, 2014); Paul J. Crutzen and Eugene F. Stoermer, “The ‘Anthropocene’” (2000), with commentary by Will Steffen, in *The Future of Nature: Documents of Global Change*, ed. Libby Robin, Sverker Sörlin, and Paul Warde (New Haven, 2013): 483–90.

⁸ Walter Friedman and Geoffrey Jones, “Business History: Time for Debate,” *Business History Review* 85, no. 1 (2011): 1–8; Richard Heede, “Tracing Anthropogenic Carbon Dioxide and Methane Emissions to Fossil Fuel and Cement Producers, 1854–2010,” *Climatic Change* 14, no. 122 (2014): 229–41.

⁹ Ann-Kristin Bergquist, “Business and Sustainability,” in *Routledge Companion to the Makers of Global Business*, ed. Teresa da Silva Lopes, Christina Lubinski, and Heidi Tworek (London, forthcoming).

¹⁰ Alfred D. Chandler, *Scale and Scope: The Dynamics of Industrial Capitalism* (Cambridge, MA, 1990); Alfred D. Chandler, Franco Amatori, and Takeshi Hikino, eds., *Big Business and the Wealth of Nations* (New York, 1997).

social scientists to pay close attention to the processes of institutional innovation to accomplish such an energy transition, by studying failures and successes of earlier institutional arrangements.¹¹ The research agenda he proposed is more relevant today than ever.¹² Climate change, caused by burning fossil fuels, has been described as the “greatest market failure the world has ever seen.”¹³ It is both odd and unfortunate that business historians—as they are *business* historians—have not felt more urgency to engage in more research about the greatest challenge of our time.¹⁴

Climate change is certainly not the only issue that has emerged as a problem for society and business to solve in the twenty-first century. Progress in modern scientific understanding of the environmental impacts caused by business has changed vastly since the mid-twentieth century. It covers the discovery of new problems—such as transboundary air pollution, acid rain, ozone depletion, and of course, climate change—and an endless list of other scientific discoveries. The understanding of the environment itself has thus changed vastly since the 1960s.¹⁵ There has been a gradual growing awareness of the extent to which the human enterprise has altered not only the local or regional environment, but the whole global ecological system. The Anthropocene has emerged as the most influential concept representing that insight.¹⁶ Awareness of and insights into the global dimension of environmental challenges were already manifested by the first United Nations Conference on the Human Environment, held in Stockholm in 1972, and since then the number of global conferences, organized by the UN and other organizations, has only increased, mirroring the global nature of climate change and other related issues. The Paris Agreement in 2015, which for the first time involved all nations in a common goal to limit the global temperature increase in the twenty-first century at 2°C above preindustrial levels, constitutes an aspirational global accord that will trigger and legitimize

¹¹ Alfred D. Chandler, “Industrial Revolutions and Institutional Arrangements,” *Bulletin of the American Academy of Arts and Sciences* 33, no. 8 (1980): 33–50.

¹² Chandler’s major concern about fossil fuel lock-in and the need for energy transition was related to future depletion of oil resources and national security. At the same time, Chandler did not consider a shift back to coal as an alternative, because of air pollution and health issues related to coal use. Chandler, “Industrial Revolutions,” 48.

¹³ Nicholas Stern, *The Stern Review: The Economics of Climate Change* (Cambridge, MA, 2007), viii.

¹⁴ Friedman and Jones, “Business History”; Bergquist, “Business and Sustainability.”

¹⁵ Paul Warde, Libby Robin, and Sverker Sörlin, *The Environment: A History of the Idea* (Baltimore, 2018).

¹⁶ See, for example, Gisli Palsson, Bronislaw Szerszynski, Sverker Sörlin, John Marks, Bernard Avril, Carole Crumley, Heide Hackmann, et al., “Reconceptualizing the ‘Anthropos’ in the Anthropocene: Integrating the Social Sciences and Humanities in Global Environmental Change Research,” *Environmental Science & Policy* 28 (Apr. 2018): 3–13.

more climate action around the world.¹⁷ Of the 197 Parties to the Convention, 185 have ratified the agreement as of April 2019.¹⁸

Against this background, the relation between business and the environment has evolved through periods of fast and dramatic changes over the past fifty years. These changes have involved corporate leaders growing their environmental awareness, entrepreneurs creating new markets, government policies shifting in scope and direction, consumers and investors changing their preferences, and big business shifting from being seen solely as profit-seeking polluters to being regarded as agents capable of meeting the world's needs, including creating sustainable development on a voluntary basis.¹⁹ The paradox, which is the focus of several articles in this special issue, is that environmental fundamentals have continued to deteriorate. The question of why business actions have not kept pace with global environmental degradation is among the most critical topics debated by scholars today.²⁰ It is addressed in recent work by Jones and in the articles by Adam Rome, Marten Boon, Ann-Kristin Bergquist, Shawn Cole, John Ehrenfeld, Andrew King, and Auden Schendler contained in this special issue. The difficulties in creating effective public policies that incentivize or force companies to internalize the cost of their negative externalities is another huge topic for debate, and is discussed in the article by Charles Halvorson, while Simone M. Müller's article demonstrates how loopholes in public policies have enabled companies to externalize their environmental costs, to markets in other countries. Exploring the tensions between business, economic growth, and environment involves understanding why the market and governments have continued to incentivize and even reward unsustainable business practices across the globe as much as understanding how entrepreneurs have managed to create markets for more sustainable products and why managers of large corporations, in some cases and geographies, have chosen and managed to improve their companies' environmental performances.

¹⁷ The ambition is, however, to pursue efforts to limit the temperature increase to 1.5°C. See, for example, Raymond Clémençon, "Two Sides of the Paris Climate Agreement: Dismal Failure or Historic Breakthrough?," *Journal of Environment and Development* 25, no. 1 (2016): 3–24; and Robert Falkner, "The Paris Agreement and the New Logic of International Climate Politics," *International Affairs* 92, no. 5 (2016): 1107–25.

¹⁸ United Nations "Paris Agreement – Status of Ratification" (accessed April 1, 2019) <https://unfccc.int/process/the-paris-agreement/status-of-ratification>

¹⁹ Bansal and Hoffman, *Oxford Handbook*; Jones, *Profits*,

²⁰ Climate change, toxic chemical emissions, and other problems are increasingly identified as "wicked problems," which are difficult or impossible for business to solve, because of complex contractionary requirements not only constrained by internal organizational barriers, but founded in the very rules of the market economy. See, for example, Christopher Wright and Daniel Nyberg, "An Inconvenient Truth: How Organizations Translate Climate Change into Business as Usual," *Academy of Management Journal* 7, no. 5 (2017): 1633–61; and *Climate Change, Capitalism, and Corporations: Processes of Creative Self-Destruction* (Cambridge, UK, 2015).

An early theme in business history research, dating to the 1990s, was focused on firm responses to industrial pollution problems in the nineteenth century and the first part of the twentieth. This period is sometimes defined as the “first wave of environmentalism,” which proceeded alongside the Industrial Revolution up until the 1930s.²¹ The first stream of business research was clearly positioned in relation to environmental history and focused on the immediate effects of the First and Second Industrial Revolutions. Rosen and others raised awareness among business historians that industrial capitalism in the United States and parts of Europe had not developed independently from the protests and legal processes against polluting firms and that businesses themselves had responded with great variety.²² A more nuanced perception and balanced understanding of the complexities and varieties of business actions in addressing air and water pollution and waste problems developed with this research.

A growing number of studies then addressed business responses as a reaction to the 1960s’ “second wave of environmentalism.” The 1960s are indeed formative for virtually any history that concerns sustainability, and to put it mildly, the decade added a totally new dimension of complexity to business compared with previous eras. An extensive academic literature, outside of business history, covers the rise of environmentalism in the 1960s and the early 1970s. The publication of *Silent Spring*, the UN Stockholm Conference in 1972, and the Arab oil embargo in 1973, along with publication of the book *Limits of Growth* by the Club of Rome in 1972, have widely been seen as core formative events.²³ Business history studies by Bergquist and Kristina Söderholm, Jones and Christina Lubinski, Raymond Stokes, Roman Köster, and Stephen Sambrook, and Hartmut Berghoff, among others, have focused on a wide set of environmental issues evolving from the 1960s, including

²¹ Ramachandra Guha, *Environmentalism: A Global History* (New York, 2000); Klaus Weber and Sara B. Soderstrom, “Social Movements, Business and the Environment,” in Bansal and Hoffman, *Oxford Handbook*, 248–65; Jones, *Profits*.

²² See, for example, Frank Uekötter, *The Age of Smoke: Environmental Policy in Germany and the United States, 1880–1970* (Pittsburgh, 2009); “Divergent Responses to Identical Problems: Businessmen and the Smoke Nuisance in Germany and the United States, 1880–1917,” *Business History Review* 73, no. 4 (1999): 641–76; Christine Meisner Rosen, “Businessmen against Pollution in Late Nineteenth Century Chicago,” *Business History Review* 69, no. 3 (1995): 351–97; “‘Knowing’ Industrial Pollution: Nuisance Law and the Power of Tradition in a Time of Rapid Economic Change, 1840–1864,” *Environmental History* 8, no. 4 (2003): 565–97; Mattias Mutz, “Managing Resources: Water and Wood in the German Pulp and Paper Industry 1870s–1930s,” *Jahrbuch für Wirtschaftsgeschichte/Economic History Yearbook* 59, no. 2 (2009): 45–68; and Bergquist and Lindmark, “Sustainability.”

²³ See, for example, Mark Hamilton Lytle, *The Gentle Subversive: Rachel Carson, Silent Spring, and the Rise of the Environmental Movement* (Oxford, 2007); Albert Weale, *The New Politics of Pollution* (Manchester, 1992); Philip Shabecoff, *Earth Rising: American Environmentalism in the 21st Century* (Washington, DC, 2000); and Jones, *Profits*.

pressure from environmental regulations, stakeholder pressure, and technological challenges, in different industries and geographical contexts.²⁴ As demonstrated by management scholars and a few business historians, the business challenges turned increasingly complex from the 1970s, and have involved new forms of business responses as a result of regulatory pressure and reputational risks.²⁵

A third, more recent stream of research, driven by Jones, has focused on the evolution of green entrepreneurship and how for-profit entrepreneurs developed new product categories such as organic food and wind and solar energy, which were explicitly focused on “creating” sustainability. This process has also been traced back to the nineteenth century, but again, the market expansion and the scaling of these industries happened more recently, only after the 1980s.²⁶ The evolution of green entrepreneurship and the greening of manufacturing and other industries have not developed along separate development paths since the 1980s. With the rise in green consumerism and public policy support for sustainability during the 1990s in some Western countries, visionary green entrepreneurial firms scaled or were acquired by conventional big businesses.²⁷

A huge amount of empirical and conceptual research beyond business history has developed since the 1990s. The rich new literature in management studies, for example, is evident in *The Oxford Handbook of Business and the Natural Environment*, which includes thirty-eight overview chapters of different subfields in business strategy, organizational theory, marketing, accounting, international business, finance, and other fields.²⁸ Environmental history has also developed into a

²⁴ Bergquist and Söderholm, “Green Innovation”; Bergquist and Söderholm, “Transition to Greener Pulp: Regulation, Industry Responses and Path Dependency,” *Business History* 57, no. 6 (2015): 862–84; Geoffrey Jones and Christina Lubinski, “Making ‘Green Giants’: Environmental Sustainability in the German Chemical Industry, 1950s–1980s,” *Business History* 56, no. 4 (2014): 623–49; Magnus Lindmark and Ann-Kristin Bergquist, “Expansion for Pollution Reduction? Environmental Adaptation of a Swedish and a Canadian Metal Smelter, 1960–2005,” *Business History* 50 no. 4 (2008): 530–46; and Hartmut Berghoff, “Shades of Green: A Business-History Perspective on Eco-Capitalism,” in Berghoff and Rome, *Green Capitalism?*, 13–31. On how environmental pressures impacted the waste industry, see Raymond Stokes, Roman Köster, and Stephen C. Sambrook, *The Business of Waste: Great Britain and Germany, 1945 to the Present* (Cambridge, UK, 2013).

²⁵ See, for example, Sluyterman, “Royal Dutch Shell”; Bergquist and Söderholm, “Transition”; and Ann-Kristin Bergquist, “Dilemmas of Going Green: Environmental Strategies in the Swedish Mining Company Boliden, 1960–2005,” in Berghoff and Rome, *Green Capitalism?*, 147–71.

²⁶ Jones, *Profits; Varieties*; Andrew N. Case, *The Organic Profit: Rodale and the Making of Marketplace Environmentalism* (Seattle, 2018).

²⁷ Jones, *Profits*; Bergquist, *Business*.

²⁸ Bansal and Hoffman, *Oxford Handbook*. See also Stephanie Bergels and Frances Bowen, “Taking Stock, Looking Ahead: Editor’s Introduction to the Inaugural *Organization & Environment* Review Issue,” *Organization & Environment* 28, no 1 (2015): 3–7.

diverse and vibrant subject with global coverage.²⁹ Leading scholars in these two fields are integrating the big debates around climate change, the Anthropocene, and the new concept of “planetary boundaries,” which defines a “safe operating space for humanity” for the international community, including the private sector, as a precondition for sustainable development.³⁰ The advancement reflects how the environmental issue has grown in scope and complexity in recent decades.

Before turning to the articles in this special issue, I will outline five themes to which business historians can advantageously contribute. These themes contain a wide set of critical issues evolving from the 1960s, which are also evident in the articles contained in this special issue. But indeed, since the scope of events and the diversity of development paths have been so encompassing, these themes can only serve as principle themes aimed at both inspiring and facilitating a renewed research agenda. Addressing issues about business and sustainability, and its inherent tensions, requires new ways of thinking about sources beyond the company archives.

Governments and Public Regulation

The first grand theme concerns the fast and comprehensive growth in government regulations since the 1960s. The impact of this development on business has been overwhelmingly ignored in mainstream business history studies, although these regulations heavily targeted the core industries on which business historians have traditionally focused, such as the automobile industry, the chemical industry, and the mining industry. The evolution of public environmental regulations took various forms in different countries. They have shifted in direction and scope over time, from being dominated by so-called command-and-control approaches in the 1970s to a gradual shift toward market-based regulations, such as taxes and tradable permits, from the 1980s, but also toward subsidies and support for business self-regulation programs.³¹

²⁹ John R. McNeill, “The State of the Field of Environmental History,” *Annual Review of Environment and Resources* 35 (2010): 345–78; Andrew C. Isenberg, ed., *The Oxford Handbook of Environmental History* (Oxford, 2014).

³⁰ The framework is based on scientific evidence that human actions since the Industrial Revolution have become the main driver of global environmental change. Johan Rockström, Will Steffen, Kevin Noone, Åsa Persson, F. Stuart Chapin III, Eric F. Lambin, Timothy M. Lenton, et al., “A Safe Operating Space for Humanity,” *Nature* 461 (24 Sept. 2009): 472–75; Steffen et al., “Planetary Boundaries”; Gail Whiteman, Brian Walker, and Paolo Perego, “Planetary Boundaries: Ecological Foundations for Corporate Sustainability,” *Journal of Management Studies* 50, no. 2 (2013): 307–36.

³¹ See, for example, David Vogel, *The Market for Virtue: The Potential and Limits of Corporate Social Responsibility* (Washington, DC, 2005); *The Politics of Precaution: Regulating Health, Safety and Environmental Risks in Europe and the United States* (Princeton, 2012);

The Clean Air Act Amendments, passed by the U.S. Congress in 1970, for example, had systematic implications, not only for the American automobile industry, but also for those companies in Europe and Japan that exported to the U.S. market.³² The whole process, which involved significant requirements for technological change, negotiations, and legal battles, has been surprisingly neglected in the work of leading business historians.³³ The regulatory controversy about the regional and global environmental impact of the automobile industry, for example, did not abate after the 1970s, but rather shifted in scope, evolving into the climate change debate and contradictory requirements concerning fuel efficiency and air pollutants such as NO_x, amid a range of other issues.³⁴

The environmental issue, with climate change as the widest and most fundamental threat, cuts across the global automobile industry today. A painful gap exists in the historical literature, the content of which could give a sense of the historically shaped inertias and difficulties in transforming this industry, which has been a classical subject of studies in business history. The automobile industry serves here as only one example of a huge number of industries put under regulatory pressure since the 1970s. Over time, the politics has also changed from a local, regional, and national focus to also involve transnational and global agreements. The literature on this field of business history is sparse, although there are exceptions in a handful of company histories,

Richard N. L. Andrews. *Managing the Environment, Managing Ourselves: A History of American Environmental Policy*, 2nd ed. (New Haven and London, 2006); and Rena I. Steinzor, "Reinventing Environmental Regulation: The Dangerous Journey from Command to Self-Regulation," *Harvard Environmental Law Review* 22, no. 1 (1998): 103–202.

³² James E. Krier and Edmund Ursin, *Pollution and Policy: A Case Essay on California Federal Experience with Motor Vehicle Air Pollution 1940–1975* (Berkeley and Los Angeles, 1977); Tom McCarthy, *Automania: Cars, Consumers and the Environment* (New Haven, 2007); Brian C. Black. "Driving Change: The Winding Road to Greener Automobiles," in Berghoff and Rome, *Green Capitalism?*; Rüdiger K. W. Wurtzel, *Environmental Policy Making in Britain, Germany and the European Union: The Europeanisation of Air and Water Pollution Control* (Manchester, 2002).

³³ One exception is Mira Wilkins, who noted that the U.S. government in the 1970s imposed new standards for safety, emission control and mile-per-gallon performance on cars sold in the United States, and the cost burden imposed on the domestic automobile industry by these regulations, especially by the Energy Policy and Conservation Act of 1975. See Wilkins, "Multinational Automobile Enterprises and Regulation: An Historical Overview," in *Government, Technology, and the Future of the Automobile*, ed. Douglas H. Ginsburg and William Abernathy (New York, 1980), 221–58.

³⁴ The contradictory requirements of fuel efficiency and control of NO_x emissions was one of the key reasons driving the so-called Dieselgate scandal. Christian Brand, "Beyond 'Dieselgate': Implications of Unaccounted and Future Air Pollutant Emissions and Energy Use for the United Kingdom," *Energy Policy* 97 (Oct. 2016): 1–12.

including Jones on Unilever, Keetie Sluyterman on Shell, and Bartow Elmore on Coca-Cola.³⁵

Governmental regulations and issues like business strategy cannot be viewed as separate entities.³⁶ Throughout the history of environmental policy, business has been involved in shaping these regulations, especially at national and subnational levels. Since the 1970s firms have increasingly mobilized as key political players, engaged with shaping global processes both directly and indirectly.³⁷ Business has played an increasing role in both national and international environmental politics, through both cooperation and lobbying, via national trade organizations and international cooperation like the International Chamber of Commerce and the World Business Council for Sustainable Development.³⁸ Industry's involvement has been a critical factor in the policy deliberations related to stratospheric ozone climate change and a range of other profound issues.³⁹ Yet few business history studies have explored these domains. In this special issue, Halvorson's article on the U.S. Environmental Protection Agency's (EPA's) deregulation policy and the study by Mélodie Cartel, Franck Aggeri, and Jean-Yves Cansill on the role of business in the creation of the European carbon market represent novel contributions, as does Hugh Gorman's research on the role of business in constructing systems for environmental governance.⁴⁰

³⁵ Geoffrey Jones, *Renewing Unilever: Transformation and Tradition* (Oxford, 2005), 342–47; Keetie Sluyterman, *Keeping Competitive in Turbulent Markets, 1973–2007*, vol. 3 of *A History of Royal Dutch Shell* (Oxford, 2007); “Royal Dutch Shell”; Bartow J. Elmore, *Citizen Coke: The Making of Coca-Cola Capitalism* (New York, 2015).

³⁶ Aggeri and Cartel, “Le changement climatique.”

³⁷ David L. Levy and Peter L. Newell, introduction to *The Business of Global Environmental Governance*, ed. David L. Levy and Peter L. Newell (Cambridge, MA, 2005).

³⁸ David Coen, “The European Business Interest and the Nation State: Large-Firm Lobbying in the European Union and Member States,” *Journal of Public Policy* 18, no. 1 (1998): 75–100; David Coen, “The Evolution of the Large Firm as a Political Actor in the European Union,” *Journal of European Public Policy* 4, no. 1 (1997): 91–108; “Environmental and Business Lobbying Alliances in Europe: Learning from Washington?,” in Levy and Newell, *Business*, 197–222; Geoffrey Jones and Peter Miskell, “European Integration and Corporate Restructuring: The Strategy of Unilever, c.1957–c.1990,” *Economic History Review* 58, no. 1 (2005): 113–39; David Schepers, “Business-Government Relations: Beyond Lobbying,” *Corporate Governance: The International Journal of Business in Society* 10, no. 4 (2010): 475–83.

³⁹ See, for example, Robert Falkner, “Business Conflicts and US International Environmental Policy: Ozone Depletion, Climate and Biodiversity,” in *The Environment, International Relations and U.S. Foreign Policy*, ed. P. G. Harris (Washington, DC, 2001), 157–77; and Robert Falkner “The Business of Ozone Layer Protection: Corporate Power in Regime Evolution,” in Levy and Newell, *Business*, 105–34.

⁴⁰ Mélodie Cartel, Franck Aggeri, and Jean-Yves Cansill, “L’histoire méconnue du marché européen du carbone: Archéologie du secteur électrique,” *Entreprises et Histoire* 1, no. 6 (2017): 54–70; Hugh Gorman, “The Role of Business in Constructing Systems for Environmental Governance,” in Berghoff and Rome, *Green Capitalism?*, 33–54.

Corporate Environmentalism

A second grand theme relates to business-led initiatives to protect the environment, defined here under the theme of corporate environmentalism. Many different concepts have been, and are still being, used to characterize business-led environmentalism, including “green capitalism,” “eco-capitalism,” and “free-market environmentalism,” among others. All of these notions are trying to grasp the growing trend in business to address environmental issues for strategic reasons, beyond what is required by governmental legislative frameworks.⁴¹ The management literature in this field has grown enormous, especially with respect to business responses to the development of new market institutions created by the private sector itself.⁴² Scholarship on corporate environmentalism contains different subfields which cover studies of the development of new market institutions such as business self-regulation programs, certification schemes and new metrics supporting voluntary action.⁴³ These new institutions have involved industry-sponsored codes of conduct; an array of certifications, standards, guidelines, and eventually frameworks to guide companies to integrate “sustainability” into core business strategies; and means to disclose corporate environmental performance indicators to investors, consumers, and other stakeholders.⁴⁴ In 1996, for example, the International Organization for Standardization (ISO) launched the environmental management system ISO 14001, which six years later had been adopted by nearly fifty thousand facilities in 118 countries.⁴⁵

Various historical factors explain the beginning of the strong trend of corporate environmentalism in the 1980s. One explanation identifies the ideological shifts toward a renewed belief in the free market and widespread loss of confidence in the ability of governments to act meaningfully, which proceeded along with the neoliberal ideas emerging in the

⁴¹ See, for example, Elizabeth Chrun, Nives Dolsak, and Aseem Prakash, “Corporate Environmentalism: Motivations and Mechanisms,” *Annual Review of Environment and Resources* 41 (2016): 341–62; Thomas P. Lyon and John W. Maxwell, *Corporate Environmentalism and Public Policy* (New York, 2004); and Hoffman, *Heresy*.

⁴² On self-regulation, see Andrew A. King and Michael J. Lenox, “Industry Self-Regulation without Sanctions: The Chemical Industry’s Responsible Care Program,” *Academy of Management Journal* 43, no. 4 (2000): 698–716. See also various chapters in Bansal and Hoffman, *Oxford Handbook*.

⁴³ Chrun, Dolsak, and Prakash, “Corporate Environmentalism.”

⁴⁴ Jones, *Profits*, 233–62.

⁴⁵ Aseem Prakash and Matthew Potoski, *The Voluntary Environmentalists: Green Clubs, ISO 14001, and Voluntary Environmental Regulations* (Cambridge, UK, 2006). On the development of other voluntary programs, see also Richard D. Morgenstern and William A. Pizer, eds., *Reality Check: The Nature and Performance of Voluntary Environmental Programs in the United States, Europe, and Japan* (Washington, DC, 2007).

Reagan-Thatcher era.⁴⁶ Another explanation is that a number of events in the 1980s—including the Bhopal catastrophe in India in 1984, Exxon Valdez oil spill in 1989, and discovery of the ozone hole—put new pressure on firms to deal strategically with environmental risks and to increase transparency about their environmental policies.⁴⁷ A third explanation points to new management theories of a costless greening of business, through win-win solutions based on eco-efficiency and other concepts (see also the article by Bergquist et al. in this special issue).⁴⁸ From a business history perspective, however, corporate environmentalism from the 1980s onward represented a remarkable turn of events. Big business in the Western world moved forward at a striking pace to become greener—by using new metrics and issuing sustainability reports, but also by acquiring values-driven green entrepreneurial firms.⁴⁹

The historical foundations of this complex trend have been examined by business historians, but the scope and importance of the phenomenon is so great that much more research is needed.⁵⁰ Business historians, including those focused on accounting history, have an important task to not only look at the emergence of these trends, but also critically examine their impact. The so called triple bottom line (TBL), for example, introduced by John Elkington in 1994, has been adopted by thousands of large corporations worldwide.⁵¹ However, in 2018, Elkington himself denounced the concept and argued that it had been captured and diluted by accountants and reporting consultants, while at the same time corporate leaders had moved “heaven to ensure that they hit their profit target” while not doing close to the same to hit their social and environmental targets.⁵² Only a historical analysis can help us to understand the processes that have created such devastating failures in outcomes.

⁴⁶ During the Reagan years, virtually all environmental protection policies enacted during the 1970s were to be reevaluated as a part of the new president’s larger agenda of reducing the scope of governmental participation and expanding that of the private sector. See Neil Gunningham, “Environmental Law, Regulation and Governance: Shifting Architectures,” *Journal of International Law* 21, no. 2 (2009): 179–212.

⁴⁷ Hoffman, *Heresy*, 87–140.

⁴⁸ The management scholar Andrew J. Hoffman has suggested a periodization of the history of corporate environmentalism as a movement along an evolutionary adaptive learning process since the 1960s, with a proactive, strategic mode of corporate environmentalism developing from the 1980s. Hoffman, *Heresy*.

⁴⁹ Jones, *Profits*, 359–60.

⁵⁰ See Jones, *Profits*.

⁵¹ John Elkington, “Towards the Sustainable Corporation: Win-Win-Win Business Strategies for Sustainable Development,” *California Management Review* 36, no 2 (1994): 90–100. See also John Elkington, “Enter the Triple Bottom Line,” in *Triple Bottom Line: Does It All Add Up?*, ed. Adrian Henriques and Julie Richardson (London, 2004), 1–16; and “25 Years Ago I Coined the Phrase ‘Triple Bottom Line’: Here’s Why It’s Time to Rethink It,” *Harvard Business Review*, 25 June 2018.

⁵² Elkington “25 Years Ago.”

No coherent concept or empirical study captures the whole trend, timings, and geographical diversities of corporate environmentalism, nor is there one answer as to what mechanisms turned corporate environmentalism into a global trend. The growing scope of environmental challenges, integration of global markets, and the development of green consumer preferences are all factors that help to explain, but the need for new research is large. As Rome states in his article about DuPont in this special issue, a multiauthored history of corporate responsibility in the United States has only touched on the subject, particularly with respect to empirical studies of corporate environmental performance since the late 1980s. The same holds for virtually all other countries, including those in Europe.

Market Transformations

The third grand theme relates to environmentally driven market transformations, and the role of green entrepreneurship as well as the role of incumbent firms, in reshaping markets. Seen against the development of mounting scientific evidence of an increasingly serious environmental crisis since the 1960s, business and other historians need to start asking big questions about why we have not seen a next industrial revolution based on renewable energy and the sustainable products and services beginning to materialize.⁵³ As Boon notes in his article about the oil industry in this special issue, more than 80 percent of the world's primary energy supply still came from burning fossil fuels in 2018. Market transformations are driven by pull factors from the demand side and push factors from the supply side, but despite the huge growth that has occurred in greener products and services, the transformation appears to have been—and still is—surprisingly slow. Business and economic historians have an important role to play in explaining this inertia, and they may need to go back to the very beginning of the Industrial Revolution, and the rise of fossil fuel-based industrial growth, to find answers. Jones's recent research provides business historians with a framework for understanding the barriers facing radical and values-driven green entrepreneurs, which relates to several problems embedded in the very rules of the market economy. These rules include unpriced externalities, but also a more recent pressure on firms from capital markets to meet quarterly returns, which have kept firms from undertaking deep and long-term investments

⁵³ Scholars have debated and provided frameworks to predict the “next” industrial revolution; for example, Paul Hawken, Amory B. Lovins, and L. Hunter Lovins, *Natural Capitalism: The Next Industrial Revolution* (London, 1999).

in environmental sustainability.⁵⁴ A broad problem raised by some scholars is that business appears to have focused on efforts to only reduce unsustainability, rather than creating sustainability, which is not the same.⁵⁵

The Concept of Sustainability

A fourth, and tremendously impactful, theme is that the national and international politics, regulations, and business actions to address environmental issues were redefined under the concept of “sustainable development” from the late 1980s. It is evident that the genesis of the concept of sustainability, and the idea that economic growth and development might destroy its own foundations, has deeper historical roots than the 1980s, when the World Commission on the Environment and Development popularized the concept of sustainable development as development that “meets the needs of the present without compromising future generations to meet their needs.”⁵⁶ There are formulations in the preindustrial English language that address the sense that humankind must ensure its material reproduction in a way that does not diminish the fortunes of future generations.⁵⁷

The intellectual history of the concept of sustainability is, however, only one dimension of how the concept can be approached. What particularly concerns business historians in terms of scope is the policies and business responses that followed the reactions to the sustainability concept from 1987, which have indeed been abundantly debated. There is a great need for research that documents how the very concept of sustainability has been constructed not only in academic literature and in politics, but within the business community itself.⁵⁸ New business history research is emerging in the field that discusses

⁵⁴ Jones, *Profits*. The key role of financial markets in contributing to a low-carbon economy is stressed in the recent special issue on Finance for Environmental Transition in *Organization & Environment*. Celine Louche, Timo Busch, Patricia Crifo, and Alfred Marcus, “Financial Markets and the Transition to a Low-Carbon Economy: Challenging the Dominant Logics,” *Organization & Environment* 32, no. 1 (2019): 3–17.

⁵⁵ John Ehrenfeld has argued that virtually everything business has done in the name of environmental management, greening, eco-efficiency, and sustainability refers to reducing unsustainability. Ehrenfeld, *Beyond the Brave*; Ehrenfeld and Andrew J. Hoffman, *Flourishing: A Frank Conversation about Sustainability* (Stanford, 2013).

⁵⁶ World Commission on the Environment and Development, *Our Common Future* (Oxford, 1987).

⁵⁷ Paul Warde, “The Invention of Sustainability,” *Modern Intellectual History* 8, no. 1 (2011): 153–70.

⁵⁸ Jones, *Profits*, chap. 9. For historical research about the intellectual history of sustainability, see Paul Warde, *The Invention of Sustainability: Nature and Destiny, c.1500–1870* (Cambridge, UK, 2018); Jacobus A. Pisani, “Sustainable Development – Historical Roots of the Concept,” *Environmental Sciences* 3, no. 2 (2006): 83–96; John Robinson, “Squaring the Circle? Some Thoughts on the Idea of Sustainable Development,” *Ecological Economics* 48, no. 4 (2004): 369–84.

how the concept has been captured by business and translated into the market place, as well as problems with dilution of the concept. Sustainability is today considered “business mainstream,” and historians need to critically examine the broad and worldwide diffusion of the concept, what it has meant in terms of actual changes, and differences between business practice and rhetoric through a historical lens.

Geography

Finally, a fifth, and huge, theme relates to geography. Business historians are very aware that organization of market economies, business systems, and corporate governance varies significantly across geographies and over time.⁵⁹ “Capitalism” has not existed, and does not exist, in monolithic terms.⁶⁰ Political economists, for example, have documented and stressed how companies facing similar environmental pressures have adopted surprisingly and radically different strategies, ranging from strong opposition and challenges to the scientific basis for action to constructive engagement in developing alternative technologies.⁶¹ Also, historians, like Frank Uekötter, have documented diverging responses to air pollution, such as in Germany and the United States.⁶² Jones in his book *Varieties of Green Business* identifies considerable geographical differences in the market growth of consumption of organic food as well as organic culture, for example, and stresses that these geographical differences are caused by contextual factors such as governmental policies, culture and beliefs, and even national images.⁶³ When it comes to big business, scholars suggest that the Anglo-American

⁵⁹ Chandler, *Scale and Scope*; Richard Whitley, *European Business Systems: Firms and Markets in Their National Contexts* (London, 1992); Richard Whitley, *Competing Capitalisms: Institutions and Economics* (Cheltenham, 2002).

⁶⁰ Frank Uekötter, among others, has criticized the environmental historians for their monolithic view of capitalism. See Uekötter, “Confronting the Pitfalls of Current Environmental History: An Argument for an Organisational Approach,” *Environment and History* 4, no. 1 (1998): 37.

⁶¹ Scholars have suggested that U.S. companies in the coal, oil, automobile, utility, and chemical industries lobbied politicians, challenging the science of climate, while European industry, by contrast, was far less aggressive in responding to the issue. See, for example, David L. Levy and A. Kolk, “Strategic Responses to Climate Change: Conflicting Pressures on Multinationals in the Oil Industry,” *Business and Politics* 4, no. 3 (2002): 275–300; David L. Levy and Peter L. Newell, “Oceans Apart? Business Responses to the Environment in Europe and North America,” *Environment* 42, no. 9 (2000): 8–20; and John Bierger Skjaerseth and Tora Skodvin, “Climate Change and the Oil Industry: Common Problems, Different Strategies,” *Global Environmental Politics* 1, no. 4 (2001): 43–64.

⁶² Uekötter, *Age of Smoke*. On diverging patterns, see also Bergquist and Söderholm, “Transition”; and Jones and Lubinski, “Making ‘Green Giants.’”

⁶³ Jones, *Varieties*; Geoffrey Jones and Simon Mowatt, “National Image as a Competitive Disadvantage: The Case of the New Zealand Organic Food Industry,” *Business History* 58, no. 8 (2016): 1262–88.

system of business-government relations, characterized as adversarial compared with the more corporatist arrangements in Europe, has had far-reaching impacts on how corporations respond to environmental challenges on the two continents.⁶⁴ These types of issues have often been overlooked by management scholars, and business historians have an opportunity to advance our understanding as to why green entrepreneurship has been growing stronger in some regions, as well as why variety exists among large corporations in pursuing a greener path of value creation.

Finally, one critical aspect of geography is that the majority of the business history literature on business and the environment focuses on western Europe and the United States. This reflects an overall bias in the disciplines of business and economic history toward the developed West.⁶⁵ There is a big challenge and opportunity for business historians to fully incorporate the experiences of Africa, Asia, and Latin America into their work on business and the environment.

Much can be written about the broad domain of business and the environment in Africa, Asia, and Latin America. Since the nineteenth century, Western multinationals have inflicted enormous ecological damage on the non-Western world, as those regions were turned into suppliers of primary commodities and food to the industrialized world.⁶⁶ The rapid economic growth of some emerging countries during the second wave of globalization, beginning in the 1980s, entailed a new surge of ecological damage. Using the crude measure of absolute carbon dioxide emissions, for example, China and India emerged as the largest and third-largest sources, respectively, of carbon emissions in the world over the last two decades, together accounting for at least

⁶⁴ David Vogel, "Why Businessmen Distrust the State: The Political Consciousness of American Corporate Executives," *British Journal of Political Science* 8, no. 1 (1978): 45–78; *National Styles of Regulation: Environmental Policy in Great Britain and the United States* (Ithaca, 1986); Gunningham, "Environmental Law"; David Wallace, *Environmental Policy and Industrial Innovation: Strategies in Europe, the US and Japan* (London, 1995).

⁶⁵ Gareth Austin, Carlos Dávila, and Geoffrey Jones, "The Alternative Business History: Business History in Emerging Markets," *Business History Review* 91, no. 3 (2017): 537–69.

⁶⁶ Latin American and other countries were transformed into specialists on particular crops or commodities, creating monocultural agricultures that destroyed traditional ecological systems, with long-term consequences. Infrastructural projects by Western engineering firms, such as the draining of Mexico City, had catastrophic ecological results. Shawn W. Miller, *An Environmental History of Latin America* (Cambridge, UK, 2017); "Latin America in Global Environmental History," in *A Companion to Global Environmental History*, ed. J. R. McNeill and Erin Stewart Mauldin (London, 2012), 116–31; Gregory T. Cushman, *Guano and the Opening of the Pacific World: A Global Ecological History* (Cambridge, UK, 2013); Alejandro Tortolero, "Transforming the Central Mexican Waterscape: Lake Drainage and Its Consequences during the *Porfiriato* (1877–1911)," in *Territories, Commodities and Knowledges: Latin American Environmental History in the Nineteenth and Twentieth Centuries*, ed. Christian Brannstrom (London, 2004), 121–47.

one-third of emissions. Iran, Saudi Arabia, Brazil, Indonesia, and Mexico also feature regularly in the top twenty.⁶⁷ As in the West, the bulk of the environmental history literature on the developing world has been concerned with public policies, and the role of activists and NGOs in shaping them, while the actions and motives of corporations are still a black box.⁶⁸ On a more positive note, the story of green entrepreneurs outside the developed world has begun to be researched, although a tremendous amount of work remains to be done. Jones has written on pioneering green entrepreneurs in architecture and organic food in Egypt during the postwar decades, and in ecotourism and beauty in Costa Rica and Brazil, respectively, from the 1980s.⁶⁹ Müller's article in this issue adds a further dimension by showing how the global South even became a victim of the greening of Western industry from the 1960s, through the global trade in hazardous waste.

The articles in this special issue deal with these grand themes. The first article, by Halvorson, "Deflated Dreams: The EPA's Bubble Policy and the Politics of Uncertainty in Regulatory Reform," provides a novel insight into business and government relations and the new deregulation policies emerging in the United States in the late 1970s. People often associate the era of deregulation with the presidency of Ronald Reagan, but as Halvorson and other historians have begun to show, it was Jimmy Carter who initiated the deregulatory turn that characterized the last quarter of the twentieth century. Given that both industry and neoclassical economists were attacking command-and-control regulations for being costly and inflexible in the 1970s, Halvorson demonstrates an important case about how and why the polluting industries in the end, turned their back on the new policy, which was aimed at saving the U.S. businesses billions of dollars.

Halvorson's article provides insight into the many difficulties both of turning a theoretical promise into practice and of transforming an existing regulatory system—a reality that is overwhelmingly ignored by academic economists. The new policy examined by Halvorson is the so-called bubble policy, which was supposed to offer a more flexible route to control air pollution by U.S. industry under the Clean Air Act. As Halvorson documents, the "bubble" offered more freedom to

⁶⁷ EDGAR – Emission Database for Global Atmospheric Research (CO₂ time series 1990–2015 per region/country; accessed 5 Mar. 2019), <http://edgar.jrc.ec.europa.eu/overview.php?v=CO2ts1990-2015&sort=des9>.

⁶⁸ Kathryn Hochstetler and Margaret E. Keck, *Greening Brazil: Environmental Activism in State and Society* (Durham, 2007).

⁶⁹ Jones, *Profits*, 73–74, 199–201, 202–3; Geoffrey Jones and Ricardo Reisen de Pinho, "Natura: Global Beauty Made in Brazil" (Harvard Business School Case 807-029, Aug. 2006, rev. Oct. 2012); Geoffrey Jones and Andrew Spadafora, "Creating Ecotourism in Costa Rica, 1970–2000," *Enterprise & Society* 18, no. 1 (2017): 146–83.

managers and corporate engineers to add or modify sources of air pollution, which presumably would reduce industry's compliance costs and stimulate innovation. Companies such as DuPont and 3M supported the new regulation, but as it turned out, the majority of industry preferred to continue to comply with EPA's proscriptive mandates. Halvorson suggests that part of the explanation is that the very market-based nature of this policy undermined the business narrative to contest regulation. Although the bubble never became a success, it still laid the foundation for the first U.S. cap-and-trade program in the Clean Air Act Amendments of 1990 and serves as model for taking on climate change today.

Müller, in her article, "Hidden Externalities: The Globalization of Hazardous Waste," also deals with U.S. environmental policy, but her focus is on the legislative loopholes in a national-centered regulatory framework that enabled chemical traders to turn chemicals banned by EPA for use in the United States into "new" products sold primarily to the global South. Müller's article essentially deals with the mounting chemical crises evident in the United States during the 1960s. The annual manufacture of chemicals increased more than 900 percent from 1947 to 1978 in the United States, driven by the dye and armament industries, the agriculture and pesticides industry, the pharmaceuticals industry, and others. In particular, Rachel Carson's book *Silent Spring* (1962) utterly transformed public debates around chemicals, and particularly pesticides, which turned toxic substances into a core political concern. EPA banned a series of toxic chemicals in the 1970s, and those bans created a mounting problem: chemicals being stored or illegally dumped at various places across the country. As Müller argues, this opened up a new, shady market, which she addresses by documenting the story of chemical traders Charles and Jack Colbert, who in the early 1970s saw a business opportunity arise in what was called "surplus chemical" trading. This meant trading in hazardous waste, a topic and concern that has been overlooked by business historians, although the waste and recycling industries have attracted growing attention among business historians.

Müller provides insight into how hazardous-waste dealers intricately linked externalities from U.S. industry through international trade into a growing environmental concern in the global South. Among the firms that provided the Colbert brothers with "surplus chemicals" were DuPont, Ford, Exxon, and other large companies, along with federal government agencies like the Pentagon. Müller argues that the absence of clear international definitions of hazardous waste delayed agreements on international regulations. The Colbert brothers were eventually convicted for fraud in 1986, but not for the environmental

or health consequences of their exports. Müller's article breaks new ground as researchers investigating the international trade in hazardous waste often meet dead ends, since hazardous-waste dealers avoid opening up their archives, if archives even exist, meaning researchers have to triangulate various sources. Müller gives an inspiring example of how this can be done.

Rome's article, "DuPont and the Limits of Corporate Environmentalism," also calls attention to the chemical industry, providing insight into the difficulties encountered by an established large firm when embarking on a serious attempt to turn its business model around and become drastically greener. DuPont, like the rest of the chemical industry, had an environmentally woeful history for much of the twentieth century, which has drawn the attention of environmental historians in the last decades. Rome's focus in this article, however, is on the historic turn that the company made in 1989, when Edgar Woolard began his tenure as chief executive officer: he called for a new "corporate environmentalism" and made sustainability a top priority for the whole enterprise. The article is basically concerned with the big issue of whether companies are actually doing business today substantially differently than they were three decades ago, or if they have simply become just a bit less unsustainable, as well as what factors drove the process and what stood in the way.

Rome's approach, which can serve as a model for future studies, concerns a careful analysis of four aspects of the company's record from 1989 until 2017: strategy, operations, product development, and public relations. Although Rome documents that DuPont changed drastically under strong leadership by Woolard, and later Chad Holliday, to become more environmentally sustainable, reduce its environmental impact substantially, work to develop some forward-thinking products and services, and save billions of dollars through eco-efficiency measures, it nevertheless failed to meet the expectations of its shareholders. As Rome's study indicates, the biggest obstacles were beyond the company's control. He argues that the rules of the market worked against the success of DuPont's green initiatives. For future research, Rome's article makes clear that corporate decision-making is always shaped by regulations, codes of conduct, and informal expectations that no individual company can change. In Rome's words, only a few of those "social rules" explicitly concern the environment. Yet many others—from accounting standards to disclosure requirements—are part of the calculus when managers decide how to deal with environmental issues. Though literally taken for granted, those rules can and do change over time, and according to Rome, they deserve more scholarly attention.

Boon takes on perhaps the most controversial industry with respect to the twenty-first century's environmental crisis. In his article, "A Climate of Change? The Oil Industry and Decarbonization in Historical Perspective," he questions the oil industry's response to climate change, within the framework of the industry's wider history of environmental regulation. The article provides a broad overview of how the oil industry responded to the challenge of decarbonizing the energy system starting in the 1960s. Boon deals with a variety of critical issues, including public policy, the new sustainability metrics contributing to greenwashing, and the deeper mechanisms behind carbon lock-in in the world's energy system, in which the oil industry has had, and still has, a pivotal position.

Boon documents how the oil industry embarked on an incipient energy transition in the wake of the oil crisis in the 1970s, but that this first attempt to invest in renewable-energy capabilities faded when the price of oil crashed in 1986 and when governments discontinued tax incentives and subsidies. A second push to "decarbonize" emerged in the late 1980s, with climate change as the driving concern. Boon concludes that renewable-energy activities in the oil industry changed significantly over time and showed wide variety between oil companies, and it appears—without question, according to Boon—that European oil companies have made a firm commitment to decarbonize in step with global targets while the U.S. oil industry is still lagging behind. Boon makes the major point that U.S. and European oil companies diverged in their strategies starting in the 1990s. A united oil industry opposed the imposition of policies restricting and taxing carbon dioxide emissions in the early 1990s, although more avidly in the United States, but the difference became more apparent later that decade. While most U.S. oil companies continued to reject both the science on climate change and the legitimacy of climate policies, European oil companies came out in support of the Kyoto Protocol in 1997 and formulated proactive climate strategies. Shell and BP started reporting on their sustainability, voluntarily committed to reducing their own emissions, and pioneered internal emission trading systems in anticipation of the EU trading system and both companies also expanded their investments in renewable energy. Other European oil companies followed suit. At the same time, Boon argues, it remains unclear whether the European oil companies in the forefront, like Shell, are substantially decarbonizing their businesses and driving innovation and commercialization in renewable technology and applications. The transparency and comparability of self-reported results remain problematic.

Finally, the article "Understanding and Overcoming Roadblocks to Environmental Sustainability: Past Roads and Future Prospects" by

Bergquist, Ehrenfeld, Cole, King, and Schendler is based on the debates during a multidisciplinary conference held at the Harvard Business School in 2018.⁷⁰ Participants at the conference included historians, management scholars, economists, sociologists, and practitioners, who debated critical questions about existing roadblocks to business environmental sustainability and covered topics such as public policies, energy transition, capital markets, new metrics, and the need for rethinking concepts, including the very concept of sustainability itself. Not surprisingly, in such a multidisciplinary conference, ideas regarding a viable future road toward environmental sustainability differed.

This article identifies critical issues for future business history research, one of them being the nature of business-driven initiatives since the 1980s and the reasons why, despite much discussion, progress on sustainability has lagged behind environmental degradation over the past three to four decades. Among other things, it appears that three decades of management literature that asserted “win-win” solutions were possible have made it seem too easy to achieve results. The very concept of sustainability, and how it has been translated into metrics that guide business operations, investors, and consumers, has been problematic and even a roadblock to progress. Sustainability does not exist at the firm level, but is a property of a whole system in which business is interconnected with other nodes including regulators, banks, consumers, and the natural environment itself. As a result, studying pieces of the system in detail, like a firm within its own boundaries, may not be very helpful in understanding how the system can be changed. The article suggests that overcoming current barriers to sustainability requires not only systematic interventions, but that people rethink the very essence of economic and management theory, as well as how business schools and other institutions have contributed, and still contribute, to the mounting ecological crisis, which is threatening human civilization as we know it.

As a whole, the articles in this special issue do not engage directly with the concept of the Anthropocene, but it serves as a worthy point of departure for rethinking business’s relation to the environment, since it poses questions that are fundamental to our times. The processes of economic change, driven by business enterprises that business historians have spent generations studying, appear to have reshaped the whole Earth system, although it has to be said that the concept of the Anthropocene is still a work in progress, constituting a family of

⁷⁰ “Understanding and Overcoming the Roadblocks to Sustainability,” Faculty and Research, Harvard Business School website, accessed 5 Mar. 2019, <https://www.hbs.edu/faculty/conferences/2018-understanding-and-overcoming-roadblocks-to-sustainability/Pages/default.aspx>.

arguments with many variations.⁷¹ The Anthropocene, like globalization and sustainability itself, means different things in different contexts. As argued by the environmental historian Jason W. Moore, the Anthropocene sounds the alarm but cannot explain how these alarming changes came about.⁷² At the same time, leading management scholars have suggested that the concept of the Anthropocene has changed the business challenge of sustainability. From a conceptual point of view, the issue overshadows all prior scholarly work on interactions between social and natural systems.⁷³

All the articles in this special issue address the consequences of the Great Acceleration for business's impact on the environment, and how governments and business have developed strategies to reduce their environmental impact, in both meaningful and less meaningful ways. This introductory essay has presented and contextualized this emerging domain of research with the ambition of inspiring new approaches in business history aimed at understanding and contributing to solving our environmental crisis. I hope the pathbreaking articles in this collection will inspire the new research so urgently needed on this subject.

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⁷¹ Although the Anthropocene is generally traced back to the Industrial Revolution, many argue that it is best seen as arising in the late 1940s and early 1950s, with the stratigraphic trace of the anthropogenic rift to be found in fallout of radionuclides from nuclear weapons testing. Jason W. Moore, introduction to *Anthropocene or Capitalocene? Nature, History, and the Crisis of Capitalism*, ed. Jason W. Moore (Oakland, 2016), 1-13; Simon L. Lewis and Mark L. Maslin, "Defining the Anthropocene," *Science* 519 (12 Mar. 2015): 171-80.

⁷² Moore, introduction, 5.

⁷³ Andrew J. Hoffman and P. Devereaux Jennings, *Re-engaging with Sustainability in the Anthropocene Era* (Cambridge, UK, 2018).