Introduction: approaching golf and environmental issues

In a 1964 edition of *The Golf Course Reporter*, a premiere journal for course superintendents in North America, journal editor Gene C. Nutter wrote a scathing review of Rachel Carson's 1962 book *Silent Spring*. Carson, whose now-renowned book included criticisms of chemical companies for their environment-damaging behaviours, was admonished by Nutter for loading her arguments with emotional rather than scientific pleas, and for using "isolated examples" of pesticide-induced harms. Nutter went so far as to suggest that "the threat of increased governmental controls [e.g. on chemicals] is a threat to greater freedom of action in our country and to the necessary use of essential agricultural tools" (Nutter, 1964: 50). For Nutter, this "threat to greater freedom of action" was also a threat to the freedom of golf industry members – members who, to a great extent, saw pesticides (i.e. chemicals) as necessary tools for superintendents committed to keeping golf courses playable and pristine.

Almost 40 years later, in 2001, another article appeared in this same journal – by this point renamed *Golf Course Management* – that had a very different take on golf-related environmental issues and Rachel Carson's book. The article, written as part of the celebration of the seventy-fifth anniversary of the Golf Course Superintendents Association of America (GCSAA), included the following excerpt:

For generations, greenskeepers went about their jobs more or less without regulation and a kind of environmental innocence, or ignorance, if you will. But that all began to change in 1962 when Rachel Carson's book, 'Silent Spring', hit the shelves. The ground-breaking work, a treatise on the dangers of pesticide use, caused much of society to take notice. (Ostmeyer, 2001: 41)

What happened?

What happened in and around the golf industry between the early 1960s and early 2000s that led to this change in tone and content? What role do the

pesticides that Nutter so vehemently defended continue to play in golf course maintenance – and what did the change from ‘ignorant’ to (presumably) ‘responsible’ practices on the part of golf course superintendents look like? What did we know – and what do we now know – about the impacts of pesticides used on golf courses on humans, animals, and the natural environment? How are golf-related pesticides currently regulated, who enforces these regulations, and what ethical stance underpins these regulations (i.e. is a ‘precautionary’ approach driving regulation, or a ‘cost-benefit’ one)? How is the problem of excessive water usage, another major environmental concern associated with golf course maintenance, dealt with and viewed by industry, governments, and others? Why is it so important to have pristine conditions on golf courses? How have governments, activists, and various golf industry members responded to golf-related environmental concerns over time? How viable is ‘organic golf’ (i.e. chemical-free golf) as an alternative to synthetic chemical-dependent golf course management?

These are the sorts of questions we explore in this book. In pursuing answers, we trace the evolution of the golf industry’s response to environmental concerns and describe how the practices of golf superintendents have changed over time. We also outline how changes in the golf industry have been justified. This means examining the maturing public relations strategies of golf industry members and highlighting how industry representatives have come to market themselves as leading figures in what we term the ‘responsible golf’ movement.

More than a study of golf-related institutional change, though, we also examine how it is that the golf industry has been so effective in some contexts in minimizing government regulation. We discuss, among other developments, the major and highly publicized legislation that was introduced by the provincial government in Ontario, Canada in 2008 – legislation that essentially banned pesticide use for cosmetic reasons across the province, *except when used on golf courses*. As we will note, Ontario is not alone in offering this exemption to golf. In this regard, we pursue questions on power relations and government policy, asking why it is that golf would receive ‘special status’ in recent legislation and what problems lie in forms of governance that give such latitude to industry.

Why single out golf?

Golf is a major global industry. Though estimates vary, it is generally assumed that more than 60 million people play golf worldwide, and that there are more than 32,000 courses across the globe in 140 countries (IBISWorld, 2008; Rees,

2008; Wheeler and Nauright, 2006). This includes courses in ‘emerging market’ regions of Africa and in countries such as Kazakhstan, Nicaragua, Myanmar, and Afghanistan. Golf’s professional tournaments have been major spectator events for some time now, and the sport has also been extremely successful in attracting recreational golfers from a range of demographics (although it is still a sport that is most accessible to the wealthy). While in recent years wider economic problems have impacted the sport’s rate of growth, especially in North America (e.g. see Hutheesing, 2013; Lansner, 2013), the overall impact and presence of the industry remains immense.

Along with this success has come criticism. Concerns about golf’s potential impacts on the environment have come from many directions, as we explore in later chapters. Some argue that the chemicals used on golf courses have negative effects on wildlife and humans (although it is difficult to measure the precise risks), while others note the potentially negative implications of course construction for natural habitats, and the problem of excessive water usage in course irrigation (Kross *et al.*, 1996; Kunitatsu *et al.*, 1999; Mallin and Wheeler, 2000; Wheeler and Nauright, 2006; Winter *et al.*, 2002). The golf industry has, over time, responded to these and other concerns in various ways. Most recently, as we shall see, a primary response tactic has been to stress the industry’s capacity for recognizing and dealing with environmental problems from within. Golf industry representatives are now self-professed environmental leaders.

There are, however, reasons to be sceptical about the golf industry’s proclaimed leadership on environmental issues – and, indeed, about corporate environmentalism in general. In broad terms, research conducted outside the golf industry on pro-environment measures adopted by major corporations has shown: (a) that these measures are in many cases attempts to prevent the government from implementing guidelines that might be more stringent (i.e. more environmentally responsible and economically inhibiting) than the ‘voluntary’ guidelines created and implemented by industry (Gibbons, 1999); (b) that industry, almost without exception, adopts a ‘sustainability’ approach to their environmental work – a not-uncontroversial approach that sees environmental progress and economic growth as compatible (Wilson and Millington, 2015); (c) that some industries overstate the extent to which they are, in fact, implementing pro-environment practices (i.e. they are greenwashing); and (d) that decisions to change environment-related practices within industries tend to be driven by a ‘cost-benefit’ analysis – where the economic costs of ‘going green’ are weighed against the legal and public relations costs of eschewing a corporate environmentalist agenda. This cost-benefit logic sits uncomfortably alongside

the ‘precautionary’ approach to environment-related risks that is most often preferred by public health officials.

All of these concerns are pertinent to the case of the golf industry. Put simply, there are many unanswered questions about why and when environmentally questionable strategies for maintaining and constructing golf courses are considered necessary, who says they are necessary, who benefits from this form of risk taking, and who might be negatively affected. This book was written to address these questions and others; to address what we see as a gap in our understanding of the politics of the ‘greening of golf’.

What we did: background and research

The following chapters are based on information we collected as part of our ongoing research on corporate environmentalism and the golf industry. Our study included interviews with various stakeholders in the golf industry with a vested interest in environmental issues – in particular, representatives of influential health and environmental organizations and golf course superintendents from courses that have earned environmental certification from Audubon International, an independent organization. We also visited one of the very few ‘organic’ golf courses in North America (located in British Columbia, Canada) and the lone organic course in England, conducting in-depth interviews in both cases with course owners and superintendents. Also included herein is an analysis of published interviews with the head superintendent of the highly publicized Vineyard Golf Club in Edgartown, Massachusetts. This is an organic course too, one that US President Barack Obama has been known to play.

Our study also took us north of Aberdeen in the UK, where we met with members of the ‘Tripping up Trump’ resistance group, including its founder. This activist group protested the development of a golf course in Menie Estates because of both its environmental impacts and its effects on homeowners in the areas targeted for development. It was a high-profile case – unsurprisingly so, given celebrity businessman Donald Trump’s leadership in the course’s planning and development. Our research here included interviews with ‘Tripping up Trump’ group members as well as a ‘tour’ of the disputed areas around the course.

Beyond interviews and site visits, a main source of information for our study came from an in-depth analysis of trade publications produced for golf

industry representatives in Canada and the United States. We drew especially from the publications *GreenMaster* (Canada) and *Golf Course Management* (USA), both directed towards golf superintendents, and from the United States Golf Association's (USGA's) *Green Section* family of publications, aimed towards a broader industry audience.¹ We found the information in these publications particularly informative in that they were written in large part "by golf industry members for golf industry members". As such, these publications were in some respects more revealing than any of our interviews, as they detailed behind the scenes information about industry motivations and practices. We focus to a great extent on information from these publications from the 1960s to the present, recognizing that it was in the early 1960s when the environmental movement truly began. We do, however, also look back to industry trade documents from the early 1900s to help understand the full trajectory of golf's environmental evolution. The publication *The Golf Course* – one laden with directives on how golf could modernize in the early twentieth century – is especially valuable in this regard. Finally, information from trade publications was supplemented by searches for newspaper coverage of golf-related environmental issues in the *New York Times* and major Canadian newspapers from 1962 to the present, and by a broader examination of key articles from other news media outlets around the world. Chapter 7 also contains analysis of government policies relevant to golf and the environment – in particular, the Cosmetic Pesticide Ban Act, recently instituted in the Canadian province of Ontario.

Although the interviews conducted for the study were mostly with stakeholders in the Canadian golf industry, overall the broader topics dealt with herein are international in their scope. The anti-golf and organic movements discussed in Chapters 8 and 9, respectively, are global movements. At the same time, strategies adopted by the golf industry for dealing with environment-related concerns are shared by industry members in various parts of the world. Questions about how and whether to regulate environment-related activities on golf courses are also being dealt with in many countries (though the case study featured in this book focuses on the Canadian context). Indeed, commentators around the world remain concerned about the problems and tensions that emerge when governments are mandated to both regulate the environmental impacts of industrial practices and, at the same time, promote economic growth without fail. All told, golf is now a global sport, and the environment a global issue. Any analysis of the two is bound to be wide reaching in its focus.

What is known about the health and environmental implications of golf?

While this book is mainly about how golf industry members, governments, and activists have responded to golf-related environmental issues, we acknowledge that our central arguments are based on the assumption that golf-related activities – namely the construction and maintenance of golf courses – pose potential threats to the health of humans and non-humans alike. We spend some time here, at the outset, establishing what is known and not known about these impacts. This discussion of existing research on the science of golf-related environmental impacts segues into our explanation of why it is that a sociological analysis of golf-related environmental issues is sorely needed.

We begin this overview by suggesting that, in some respects, our assumptions about golf's potential and real impacts on the environment and public health are uncontroversial and straightforward. That is to say, in recent years members of the golf industry have readily admitted that some golf course development and maintenance practices have been and can be damaging if not carried out responsibly. This is the reason that industry members have, since the 1980s especially, actively positioned themselves as leaders when it comes to dealing with golf-related environmental issues. It is also well known that some chemicals that were previously used on golf courses (e.g. DDT) came to be seen as 'too risky' for use when considering the health of non-humans and/or humans, and have therefore been outlawed (see Chapter 5).

In this way, it is widely acknowledged that golf-related activities are *potentially* damaging to the environment. Differing views still exist, however, when it comes to questions about what has been 'proven', and what remains in doubt, in regards to the risks associated with chemicals still used on golf courses today. Related questions about whether and when golf courses might be environmentally friendly spaces (e.g. as wilderness and conservation areas), and when they might be viewed as the opposite (e.g. as disrupters/destroyers of ecosystems) are also relevant here, and are discussed below.

Chemicals, golf, and health

By the United States Environmental Protection Agency (EPA)'s definition, a pesticide is a substance or mixture of substances designed to prevent, destroy, repel, or mitigate pests (EPA, 2014a). Insecticides, herbicides, and fungicides are the most well-known pesticide variants. Historically, the synthetic

production of these chemicals has proven highly effective, but also deeply controversial.

In terms of risks associated with chemical usage, a number of studies have been designed and carried out to examine the potential impacts of the pesticides, herbicides, and fungicides used on golf courses on human and non-human health. Few of these studies, however, focus directly on how exposure to these chemicals may be impacting golf course superintendents (and other on-course workers) or regular golfers who may have more intense and longer-term exposure to the chemicals used specifically on courses. A study by Kross *et al.* (1996) is noteworthy in this sense because it specifically examined the consequences of chemical usage for those who work on courses. The study – that was supported by the GCSAA – compared mortality rates for 686 golf course superintendents to rates for the general population. The researchers were especially interested in the reasons for and levels of mortality for the Caucasian male superintendent group they studied, compared to the general Caucasian male population in the United States. Kross *et al.* ultimately found that death rates attributable to non-Hodgkin lymphoma and to cancers associated with the brain, large intestine, and prostate were higher than would be expected for golf course superintendents when compared to those with similar characteristics who were *not* superintendents. Reflecting on how their results compare with other, similar studies, the researchers noted that similar patterns of “elevated NHL [non-Hodgkin lymphoma], brain, and prostate cancer mortality along with excess deaths from diseases of the nervous system has been noted among other occupational cohorts exposed to pesticides” as well (Kross *et al.*, 1996: 501). That is to say, other groups that had long-term and fairly intense exposure to the chemicals identified in Kross *et al.*’s study are, according to the research reviewed by these authors, more likely to have higher rates of the cancers identified above.

Other research, while not specifically focused on the effects of exposures to chemicals on golf courses themselves, still offers pertinent health-related information about exposure to chemicals sometimes used on golf courses. Knopper and Lean’s (2004) review of existing research on the topic – entitled ‘Carcinogenic and genotoxic potential of turf pesticides commonly used on golf courses’ – is especially helpful in this context because the authors not only highlight concerns about chemical exposure, but also point out the limitations of existing studies on the topic. For example, they describe how difficult it is to determine a clear and causal relationship between pesticide exposure and health problems such as cancer because “even the most unbiased and stringent studies cannot account for all variables” (Knopper and Lean, 2004: 276). They note also

that cohort studies – i.e. studies where groups exposed to particular pesticides are compared to cohorts not exposed in the same way – are commonly criticized for underestimating pesticide-related cancers because there is not a long enough follow-up with these groups. This is a problem because the effects of such exposures may take several years to show up, so it is assumed that some cases where cancer(s) did eventually appear would be missed in these studies. Conversely, case control studies – i.e. studies where the exposure histories of people with particular cancers are compared with histories of those who have not developed cancer – are at times thought to overstate exposure effects: “individuals may want to lay blame on a specific cause for their condition (e.g. pesticide exposure), and as such tend to overreport their exposures compared to controls” (Knopper and Lean, 2004: 276).

Even while acknowledging these limitations, Knopper and Lean saw enough evidence to strongly assert the need for future research on the topic, and to stress their bona fide concerns about the effects of exposure to golf-related chemicals. As they state:

There appears to be convincing in vitro and in vivo laboratory and epidemiological evidence to support the claim that under certain circumstances, iprodione, chlorothalonil, PMA, and 2,4-D [chemicals commonly used on golf courses at the time this research was conducted] have been associated with cancer in humans and animals. Carcinogenicity from these pesticides seems to be related to genotoxic and epigenetic effects. As is pointed out by some opponents of pesticide bylaws, although some studies may find associations between cancer and exposure to pesticides, these associations are usually very weak ... [Still], weak associations are very much different than no association at all, and studies presenting these results should not simply be disregarded or misinterpreted as meaning that exposure to the compound in question is not related to any health concern ... Weak associations should be used to highlight concern over the effects of exposure to the chemical or chemicals under study and lay the foundation for future work. (Knopper and Lean, 2004: 276–277)

Let us repeat a key statement from the above passage – “*weak associations are very much different than no association at all, and studies presenting these results should not simply be disregarded or misinterpreted as meaning that exposure to the compound in question is not related to any health concern*” (p. 276). We emphasize this point because it speaks to Knopper and Lean’s views on how to interpret the results of studies that are conducted on something as difficult to discern as the effects of chemical exposure on human and animal health. In essence, their argument – that it is irresponsible and unwise to dismiss studies because they do not offer conclusive evidence – is the same argument that underscores the

position taken by those who advocate for a precautionary approach to policy making around potentially risky chemical usage.

It is also worth noting here that Knopper and Lean are certainly not the only researchers coming to these sorts of conclusions. For example, Alavanja and Bonner, authors of a 2012 review of research on occupational pesticide exposures and cancer risk, summarized their findings by saying that “chemicals in every major functional class of pesticides including insecticides, herbicide, fungicides, and fumigants have been observed to have significant associations with an array of cancer sites” (Alavanja and Bonner, 2012: 238). While Alavanja and Bonner also responsibly note that alongside the chemicals associated with cancer are many chemicals that did not show associations, they still go on to assert that, in light of existing research, “it is reasonable and timely for the scientific community to provide a multidisciplinary expert review and evaluation of these pesticides and their potential to produce cancer in occupational settings” (p. 238). In this way, and like Knopper and Lean, Alavanja and Bonner assert that something potentially serious is going on with chemical usage, and more attention should be paid to this issue.

Public health groups, influenced by this research, have made efforts to summarize these claims and concerns in ways that will be useful for the public and policymakers. The Canadian Cancer Society, for example, outlined their position as follows:

Research to date does not show a definite link between pesticides and human cancer, but it does suggest an increasingly likely connection with cancers such as non-Hodgkin lymphoma (especially among farmers), multiple myeloma, and prostate, kidney and lung cancers. Studies on pesticides and childhood cancer show a possible connection with leukemia, brain tumours and non-Hodgkin lymphoma. (Canadian Cancer Society, n.d.)

Responding to these claims, some governments have implemented legislation that outlaws the use of chemicals for cosmetic purposes. For example, the provincial government of Ontario, Canada did just this in 2008 when they introduced the aforementioned Cosmetic Pesticides Ban Act. However, and as we discuss in Chapter 7 of this book, the golf industry was exempted from this legislation in Ontario, and has recently received similar treatment in other provinces as well.

While the golf industry has received such exemptions in a context where industry members are also claiming to be responsible users of pesticides, recent research in the United States has led to questions about chemical safety

as well. We are referring here to a 2011 study by Arcury-Quandt *et al.* that focused on golf course superintendents and grounds maintenance workers who were required to handle chemicals as part of their duties. The researchers paid particular attention to the knowledge that these individuals had about safe chemical usage. They were also interested in whether these golf course workers were, in fact, following safety guidelines pertaining to chemical applications on courses. The safety guidelines Arcury-Quandt *et al.* were especially concerned with, known as 'Right-To-Know', requires course superintendents to offer appropriate education on chemical use for on-course workers, and to be sure that workers understand and comply with existing best practice guidelines. Arcury-Quandt *et al.* (2011) were straightforward in their assessment of findings from interviews with a sample of ten golf course superintendents in five states, and with sixteen Latino grounds maintenance workers in four states:

Few superintendents were in compliance with Right-to-Know regulations or did pesticide safety training with all of their workers. Few workers had any pesticide safety knowledge. Most safety training on golf courses was rudimentary and focused on machine safety, and was usually conducted in the off-season or on rainy days, not before workers were assigned tasks. (Arcury-Quandt, 2011: 474)

This appraisal by Arcury-Quandt *et al.* is important on two levels. First, it calls into question claims of expertise and accountability by at least some members of the golf industry. That is to say, while this relatively small study in the United States should not be taken to mean that the sort of negligence Arcury-Quandt *et al.* identified is necessarily widespread, it does raise the familiar concern that what industries say they do in the name of environmental and public health may not always align with what is happening in practice. As will become evident throughout this book, we think that there are excellent reasons to interrogate the claims made by some golf industry members about the effectiveness of current attempts to respond to golf-related environmental problems. Second, the focus on the occupational health of immigrant workers in Arcury-Quandt *et al.*'s study is significant for our purposes because it directly links golf-related environmental issues with the matter of social inequality. We reflect on this in greater detail later, but suffice it to say here that this study suggests that the risks associated with chemical use are not always evenly distributed. The fact that the groups in Arcury-Quandt's study are immigrant Latino workers is relevant in the sense that it speaks to broader concerns about the social and cultural problems commonly experienced by some (especially less wealthy) newcomers to the USA

and elsewhere (McCauley, 2005). This is of course an issue for those who study globalization and its consequences.

Golf's water usage and its implications

Pesticide usage stands out as perhaps the predominant issue when it comes to golf's relationship with the game's wider surroundings. This is reflected in our own analysis herein. Pesticides are, by the above definition, designed to 'destroy'; the potential risks that follow from this 'destructive' imperative have commanded the attention of governments, industry, and the public alike. Indeed, pesticides were a key focus in the industry trade publications we assessed in our research. It is also noteworthy that our study unfolded at the same time that landmark pesticide legislation was developed and instituted in Ontario, Canada; something we discuss further in the pages that follow.

To be clear, though, this focus on pesticides in *The greening of golf* should not be taken to mean that we ignored other environmental issues in our research – golf's consumption of water among them. Indeed, the issue of water use is unavoidable when examining golf's environmental impacts. In the most obvious and straightforward sense, golf courses around the world use massive amounts of water, a point that varies in relevance and urgency depending on the context in question. For example, water demands can fluctuate greatly depending on the location of the course, with a golf course in Nevada, USA (for instance) likely demanding much more water than a course in the USA's rainier north-west region or on the west coast of Canada (GCSAA, 2009). The onset of drought conditions is also a contextual factor that can shed light on golf's water demands. Ongoing problems with water scarcity in California – and related questions about the implications of this shortage for golf courses and the ethical responsibilities of courses in this region – is but one high-profile and recent example of this (Bliss, 2015). Important too in this regard is the source from which irrigation water is derived, recognizing here that some courses effectively use recycled water (generally deemed a sound environmental practice) while others still draw from municipal drinking water sources, among others (e.g. see GCSAA, 2009).

Even with the qualifier that water usage is highly contextualized, when it comes to water consumption the numbers are still staggering. According to an oft-quoted statistic from the Washington, DC-based environmental research organization, World Watch Institute, the amount of water used per day to irrigate the world's golf courses is 2.5 billion gallons – the same amount of water

that is needed to support 4.7 billion people at the United Nations' daily minimum (WorldWatch, 2004). The Golf Environment Organization (GEO) adds that golf's water consumption is doubling every twenty years. For GEO, golf's 'water footprint' is significant; it includes, among other things, golf's irrigation needs, the use of potable water in places like clubhouses, and the production of fertilizer, pesticides, and turf (Golf Environment Organisation, n.d.c.). Historically, golf's demand on water resources has been a source of consternation in parts of the global South in particular. Indeed, when it comes to golf tourism in many parts of the world, water is *the* main issue. The United Nations Educational, Scientific and Cultural Organization (UNESCO) addressed this point in a newsletter on water and tourism:

An increasing number of low-income countries have actively promoted a large increase in tourism activities to foster their economic development. While there are clear economic benefits, there is also a downside. Problems of excessive water consumption in tourist complexes in water-scarce areas, especially where golf courses are involved, an increase in marine pollution in coastal areas from inadequate wastewater treatment and loss of crucial marine biodiversity, including coral reef destruction, have all occurred. (UNESCO, 2006)

We focus on these sorts of global concerns especially in Chapter 8's discussion of the Global Anti-Golf Movement and protests that directly address the impacts of golf-related tourism around the world.

Of course, it is not only activists and organizations such as UNESCO that have recognized the significance of golf's heavy consumption of water. A key theme of this book is the golf industry's insistence that golf's environmental impacts are 'under control', thanks to the industry's proactive efforts at achieving environmental sustainability. As we shall illustrate in upcoming chapters, the turn to 'responsible golf' from roughly the 1980s onwards involved careful consideration of how water might be conserved and/or used more efficiently on golf courses. Two excerpts from a 2009 article from the magazine *Golf Digest* entitled 'Drying out: America's courses are curbing their addiction to water' show this 'water awareness' at work:

The director of golf course maintenance at Spanish Trail is John Pollok, who came to Las Vegas in 2008 from a golf course in Los Angeles. In L.A., Pollok's annual water bill was \$250,000; at Spanish Trail, it's six times as high ... Pollok's crew constantly monitors soil moisture and can adjust irrigation levels, sprinkler head by sprinkler head, to make sure they're never putting out more than just enough. Irrigation costs have made Spanish Trail an enthusiastic participant in

the SNWA's [Southern Nevada Water Authority] Water Smart Landscape programme, which, among other things, pays cash rebates to water customers who convert turf-ed areas into 'xeriscapes.' (The word comes from the Greek *xeros*, meaning 'dry'.) In 2007, the club renovated one of its three nines under the programme and, in the process, removed 38 acres of turf, mostly from the periphery of the course. (Owen, 2009)

Angel Park Golf Club, a 45-hole public facility about five miles north of Spanish Trail, has removed 76 acres of grass, replaced much of the turf on its driving range with pinkish, pea-size gravel, turned off a fountain and eliminated three lakes. (Water features, because of evaporation, can require more irrigation than fairways do.) An important element of southern Nevada's water conservation efforts has been the conversion of golf course irrigation systems to recycled wastewater. For a decade, Angel Park irrigated with potable water, which the city pumped from Lake Mead, 30 miles to the southeast and 1,500 feet lower in elevation. During an especially dry year, in the mid-1990s, the club used 650 million gallons. Not long afterward, the Las Vegas Valley Water District (one of the seven municipal agencies that make up the SNWA) built a wastewater recycling plant a short distance from the course, and the club connected to the new main and built a reservoir. (Owen, 2009)

Practices of this kind have not gone unannounced, with the golf industry over time devising formal campaigns to stress that golf courses are indeed responsible when it comes to water use.

Even so, and without dismissing measures such as the making of 'xeriscapes', we emphasize throughout this book that it is imperative to think critically about industry claims of environmental leadership if 'greener' responses to golf-related environmental problems are to be developed and supported. This means, say, considering the potential for more efficient uses of water alongside golf's still significant overall water demands – a relevant point in light of the fact that the golf industry has, and continues to, push for its own overall expansion (potentially offsetting efficiencies in a 'big picture' sense). Consider also that the amount of land deemed irrigable on individual golf courses can change with time. On this last point, for example, a 2009 report from the GCSAA's Environmental Institute for Golf noted that between 2001 and 2005 approximately 31,877 acres (net) of irrigated turfgrass were added to the country's existing golf facilities, with superintendents citing the demand among consumers to change non-irrigated rough into irrigated rough as a reason (GCSAA, 2009: 15).

All told, water remains a pressing issue for golf – one that has been dealt with in ways that are reminiscent of industry responses to pesticide-related concerns. We shall return to the 'water question' and to issues such as the tension between economic growth and environmental sustainability in later chapters of this book.

Golf and environmental health

Finally, beyond pesticides and water, the body of research on golf's environmental impacts also includes studies focused on the well-being of non-humans and broader ecosystems. For example, and returning to research on pesticides especially, Post *et al.* (2010) state that “pesticides can adversely affect wildlife by exerting sublethal effects, by killing them outright, and indirectly by damaging their habitat or food supply” (Post *et al.*, 2010: 116). Following research from Ewald *et al.* (1998), Post *et al.* point to the ways that the use of insecticides and herbicides “contribute to eliminating insect populations that are essential for the growth of newly hatched birds” – while noting that of the twenty-nine pesticides most commonly used on golf courses, four of these are known to be highly toxic to birds.² Post *et al.* (2010) also describe how the pesticide-containing water that runs off of pesticide-treated turf into streams can have negative impacts on fish and other aquatic organisms (see Nimmo and McEwen, 1994). They note, for example, that sixteen out of the twenty-nine pesticides most commonly used on golf courses are classified as ‘highly’ or ‘very highly toxic’ (see Nimmo and McEwen, 1994). Benbrook (2008), reflecting on his examination of how the science of chemical use on golf courses has influenced environmental regulation in the United States, suggests that “in the real world of pesticide regulation, birds, fish and bees are expendable” (Benbrook, 2008: 13, quoted in Post *et al.*, 2010: 117). Course construction too has the capacity to impact on natural habitats. In Chapter 4 we will investigate a case where a beaver dam was ‘blown to bits’ to make way for a new golf course landscape.

All told, in offering this synopsis of a vast body of literature pertaining to golf-related environmental impacts, we recognize that there are always gaps and controversies. Most of all, it is difficult to ‘prove’ the extent of chemical-related impacts and problems generally and/or to isolate the impacts of chemical use on golf courses specifically. This is especially the case with the study of an open system like a golf course, where the health of golfers, golf course workers, and other inhabitants of courses are always going to be influenced by a variety of factors.

Acknowledging these limitations, though, we still return to Knopper and Lean's (2004) especially rigorous and balanced assessment of existing research on golf course chemicals and the reasons they offer for remaining extremely wary of chemical effects. What Knopper and Lean raised for us were some fairly straightforward social and political questions, including: Even if existing studies are inconclusive, why would we take any changes with the health of humans and non-humans by using non-essential chemicals on golf courses? Who benefits and who does not

from the status quo in the golf industry, and especially in the continued use of chemicals for golf course maintenance? In the next section, we suggest that social scientists have much to offer when it comes to addressing these bigger questions about why we would take on environmental risks to support a sport and leisure activity from which only some people benefit – an activity, moreover, that could be played and enjoyed without chemicals!

The need for a sociological perspective on sport and the environment

This book is an attempt to address these sorts of questions as part of our broader goal of better understanding how the golf industry has responded to environmental concerns over time. In carrying out this analysis, we look to fields that have developed tools for examining questions of social change, power relations, and inequality. Specifically, we draw herein from the interrelated fields of sociology, critical ecology, organizational studies, and social movement studies.

The sociology and critical ecology literature is useful in the first instance in situating golf-related environmental practices in their wider contexts, and especially in aiding understandings of the relationship between environmental and economic activity. In one sense, the work of commentators such as David Harvey (2005) is helpful because it outlines and appraises the broad shift towards neoliberal governance in recent years – a shift that, generally speaking, has privileged the deregulation of industry activity and market-driven solutions to social and environmental problems. Insight of this kind overlaps with the work of critical ecologists such as Schnaiberg and Gould (2000), who use the metaphor of the ‘treadmill of production’ to help them explain the process and consequences of privileging economic concerns over environmental ones. As we shall see in Chapter 7, John Hannigan (2006) makes a similar case through the concept of ‘environmental managerialism.’ This concept bespeaks the way in which governments are often ‘dually mandated’, on the one hand charged with environmental protection and on the other with stimulating economic growth. The key point is that the latter mandate, especially in neoliberal times, has a tendency to override the former. The sociology and critical ecology literature is also helpful in assessing industry efforts at impression management in a post-war context marked by growing concerns over environmental sustainability. The assumption here is that public relations campaigns are socially constructed and ideological to the extent that they tend to reinforce a set of power relations through the promotion of

key messages – messages that might, for example, promote an industry-friendly version of sustainability as the common sense approach to dealing with environmental problems (Hannigan, 2006).

These conceptualizations of power relations and the socio-political context for corporate decision-making will be adopted alongside a framework that offers a nuanced explanation for institutional change, known loosely as ‘institutional theory’ (Hoffman, 2001; Zucker, 1988). Drawing especially on the work of Andrew Hoffman and his 2001 book *From Heresy to Dogma: An Institutional History of Corporate Environmentalism*, this framework offers a foundation from which to map various influences on any organization or industry, and to aid attempts to find the various reasons that decisions are made (or not made) to change environment-related practices. In the case of golf, these influences have come from various directions: from chemical and equipment industries, suppliers of golf’s ‘tools’ for course development and management; from governments concerned with environmental issues and seeking ways of fairly regulating golf industry practices; from environmental non-governmental organizations (NGOs) who are themselves naturally concerned with the environment, though are perhaps less likely to see environmental problems through the prism of economic growth; from concerned citizens mounting activist campaigns in the face of golf’s post-war expansion; from journalists covering golf, whether in a positive or negative light; and, of course, from golfers themselves who wield power in the perception that they demand ‘ideal’ playing conditions, as we shall see. Chapters 5, 6, and 7 especially draw on this organizational studies literature.

Finally, our book also draws from social movement studies, especially when we reach Chapter 8 and attempt to understand the emergence of golf-related protests. Most influential in this regard is a foundational article by sociologists of sport Jean Harvey, John Horne, and Parissa Safai (2009), published in the *Sociology of Sport Journal* and focused on the characteristics of various sport-related global social movement organizations (see Harvey *et al.*, 2013). The authors categorize each movement along a spectrum, with neoliberal globalization at one end, alter-globalization movements in the middle, and anti-globalization movements at the far end. Our own typology of responses to golf-related environmental issues is similarly inclined. At one end, we outline what we term ‘pro-golf’ responses: ‘pro’ in that they are ‘for’ golf, but also ‘pro’ in that they are ‘Promethean’, meaning based on the idea that humankind has an inherent right to manipulate the earth. This is a business-friendly response and, as we shall see, one that grew increasingly unpalatable in the post-war years. We also map out two different types of ‘alter-golf’ responses herein. The first of these is reformist (i.e. less radical) in nature. From

roughly the 1980s onwards, the golf industry recognized that denial of golf's potential environmental impacts was itself unsustainable, and thus actively took steps towards altering course development and maintenance practices as a way of positioning the industry as environmentally responsible. Moving further across our spectrum, Chapter 9 examines organic golf, an alter-golf response in that golf itself is still valued, yet a more transformist approach in that golf's connection to the chemical industry is (for the most part) severed – recognizing that chemical industries may still supply 'organic' ingredients to courses that choose to use them. Finally, we also map out 'anti-golf' responses akin to the anti-globalization movements described by Harvey and his colleagues. All told, and with a nod to golf's scoring system, our own typology is named the PAAR (pro-alter-anti-response) continuum: **pro-golf**, **alter-golf**, and **anti-golf** responses.

The rise of 'critical golf studies'

Although we aim to make a novel contribution to thinking about golf-related environmental issues using the tools outlined above, we respectfully acknowledge that our research builds on a small but emerging body of sociology-influenced studies that focus on golf and its various sociological dimensions. A special 2010 issue of the *Journal of Sport and Social Issues* was especially significant in this regard. Contributors to this compendium highlighted the pressing need for sociologists to take golf seriously, given its economic, social, and environmental repercussions. They specifically focused on exclusionary practices around golf (Vamplew, 2010; see also Crosset, 1995; McGinnis *et al.*, 2005; Nylund, 2003), on how identities are performed on golf courses (Perkins, 2010), on the symbolic meaning of golf in the world of business (Ceron-Anaya, 2010), and, most pertinently for our purposes, on golf and the environment (Briassoulis, 2010; Neo, 2010). In doing so, these authors contributed to 'critical golf studies' – a name coined by the special issue editors (Perkins, Mincyte, and Cole, 2010).

Indeed, in their introduction to the special issue, Perkins *et al.* (2010) express their surprise at the lack of sociological research on golf. They also offer a compelling synopsis of why golf deserves attention from researchers:

[T]he characteristics of golf make it a fascinating sport for investigation: its stereotypically conservative image; its sometimes explicit and other times more insidious sexist, racist, and ablist norms; its strongly class-associated practices; and its links to global business interests. The diversity of kinds of golf that are

played and the tensions between regulation and a strongly individual ethos also suggest a rich field for research. Golf's institutional contexts are intriguingly diverse: American Country clubs, municipal public courses, golf resorts, and golfing communities. Its richly variable geographies embody productive tensions with the uniformly regulated global practice. The wider social reception of the game verges from media triumphalism and lionizing, with golf stars now firmly entrenched in celebrity culture, as evidenced by the demonizing and moral panic occasioned in the fall from grace of Tiger Woods. Moreover, golf's wider social reception entails contentious issues related to development, environmentalism, water, land-use, displacement, and labor. As the most land-hungry sport, golf development poses not only questions about justice, access, and environmental preservation but also the issues of responsibility for long-term transformations in ecological systems and landscaping politics. (Perkins *et al.*, 2010: 268)

To the extent that this special issue of the *Journal of Sport and Social Issues* addresses golf's intersections with the environment and the environmental movement, it furthers some key earlier works focused on this same topic. In a prescient *Sociology of Sport Journal* article published in 1990, Stoddart pointed to the environmental compromises that underlie attempts to attract tourists to pristine (i.e. chemically maintained) courses. "The central problem, of course," writes Stoddart, "is that golf is resource hungry in demanding large spaces and substantial water supplies" (Stoddart, 1990: 380). His arguments anticipate more recent work by Wheeler and Nauright (2006) that is likewise focused on golf's environmental implications. Having outlined golf's rather stark environmental demands, Wheeler and Nauright (2006) also describe the emergence of protest movements expressing consternation over prevailing golf industry practices – a theme we address later on as well. Furthermore, they discuss what has come to be known as 'Augusta National syndrome', the 'affliction' whereby golfers expect perfectly green playing conditions without fail, having been exposed to media representations of these same conditions on TV. Golf's relationship to media and, more broadly, consumer culture is indeed crucial in affecting the shaping and treatment of the sport's 'modern' landscapes.

Even with these initial critical studies of golf in tow, it is fair to say that golf is still understudied from a sociological perspective. We say this while recognizing that golf's environmental implications have received some attention from journalists writing in both mainstream publications and golf-focused outlets. Still, this remains an issue in need of detailed exploration. By our reading, the lack of scholarly attention given to golf is only somewhat surprising. It is perhaps curious that sociologists of sport have not paid more attention to golf, yet it is well known that sport's relationships with 'serious' social (and environmental) issues

have not received the consideration they merit in general. The common explanation for this is that serious societal problems sometimes ‘fly under the radar’ when they are sport-related because of sport’s inherent associations with play, leisure, and other ‘non-serious’ pursuits. Sport is for entertainment, in other words, and not a subject for critical scrutiny. As social scientists ourselves, our goal here is to begin to address this shortcoming in the following chapters as it pertains to golf and the environment. Golf is for entertainment for sure, but it is meaningful in other important ways as well.

This book

Our synopsis herein unfolds across five connected parts. The current chapter and the next comprise the first section of the book, entitled ‘Part I: Introduction and tools for seeing golf sociologically’. The current chapter, as you have seen, sketches out key issues pertaining to golf and the environment, establishes the central questions we pursue in the book, and introduces the structure and logic of our analysis. The next chapter (Chapter 2), entitled ‘Light green to dark green: how to make sense of responses to environmental problems’, outlines key debates within the field of environmental sociology. The main debate we focus on involves the view, on one side, that environmental problems can be solved through business-friendly innovations and the development of new technologies, and the view, on the other side, that corporate-driven solutions are rarely stringent enough to foment substantial (and necessary) environmental changes. In this context, we also explain the theoretical concepts mobilized on each side of this debate. The former, corporatist side tends to be underpinned by the theory known as ‘ecological modernization’ (EM) – a theory that positions technological ingenuity as a viable avenue towards ‘cleaner’ forms of industrialization. This is countered by the aforementioned treadmill of production concept whereby the ‘need’ for ongoing consumption and global expansion (e.g. of golf-related tourism) is problematized for putting constant and perhaps unsustainable stresses on the natural environment. In Chapter 2, we also map out our PAAR continuum in greater detail, explaining more thoroughly its links to the work of Harvey *et al.* (2009) on globalization and social movements.

The next section of the book – ‘Part II: Background and history’ – contains Chapters 3 and 4. Chapter 3, entitled ‘Waging a war on pests: golf comes to America’, outlines changes in golf course maintenance that emerged as golf moved across the Atlantic from the UK in the late 1900s. We specifically describe

how the increasing use of chemicals on golf courses and the adoption of highly invasive and at times destructive practices for altering golf course landscapes aligned well with the modernizing practices under way beyond the golf industry itself at this point in time. Golf's 'move' to America inspired discussion among key industry representatives on how to develop 'modern', predictable playing terrain, as opposed to the 'primitive' conditions of old. In the post-war years, this modernist sentiment reached its apotheosis in the use of the highly potent synthetic chemical DDT in the quest to eradicate unwanted 'pests'.

Chapter 3 fits with Chapter 4, the latter entitled 'Golf in consumer culture: the making of "Augusta National syndrome"'. Chapter 4 describes how media depictions of ideal golf playing conditions effectively provided further rationale in the post-war years for the deployment of highly impactful course management tactics. This is where we build from Wheeler and Nauright (2006) in outlining the arrival of Augusta National syndrome, named after the Augusta National golf course in Augusta, Georgia, home of the annual Masters men's golf tournament. With the televising of golf, Augusta's seemingly unblemished course aesthetic was widely disseminated. The outcome – or at least the perceived outcome – was the expectation among golfers that Augusta's lush fairways and greens could be easily achieved elsewhere. In this chapter we also highlight the economic growth imperative that has long sat at the golf industry's core. Together, Chapters 3 and 4 outline an initial 'pro-golf' response to environmental concerns, marked in large part by denial that golf must become more environmentally responsible.

The next section of the book – 'Part III: The light-greening of golf' – includes an overview of responses to environmental problems from members of the golf industry and governments both. In Chapter 5, 'The turn to responsible golf and the roots of golf's light-green movement', we take initial steps in documenting the golf industry's move towards a 'responsible' and leading position on environmental issues – in other words, towards adopting a reformist alter-golf approach. We are concerned in this chapter mainly with best practices, and even more specifically with the adoption of technology-aided protocols for turfgrass management such as integrated pest management, or IPM. As the 1980s grew near, IPM was adopted from the wider agricultural sector as a formal system for reducing (albeit voluntarily) the application of synthetic chemicals in the treatment of 'pests'. At the same time, organizations such as the GCSAA were fortifying their scientific research agenda, in part by strengthening their relationship with chemical companies who acted as funding donors. The golf industry, then, while long interested in modernization, was effectively adopting an *ecological* modernist position as the twentieth century neared its end.

Chapter 6 further advances this narrative of enhanced environmental responsibility. Entitled 'Environmentalism incorporated: professionalization and post-politics in the time of responsible golf', Chapter 6 turns to the issue of professionalization, looking specifically at the development of formal educational and impression management campaigns around golf. The former were aimed at training golf industry representatives in environmental best practices, including those discussed in Chapter 5; the latter went towards managing impressions among key audiences, meaning the public and government officials in particular. The point here is not that the golf industry had never before been concerned with training its labour force or with how golf was perceived externally. Rather, the point is that professionalization grew ever more important as the post-war period unfolded, what with the environmental movement and its problematizing of practices (e.g. pesticide spraying) gathering steam.

As its name suggests, Chapter 7, 'Light-green regulation? Environmental managerialism and golf's conspicuous exemption', looks at governments' responses to concerns about golf's environmental impacts. If the golf industry has indeed sought to manage impressions of their environmental record in the post-war years, the question becomes, how have those with regulatory authority responded to this? It is here where we focus especially on recent legislation in Ontario, Canada that exempted the golf industry from an otherwise stringent law on pesticide use for cosmetic reasons. In Chapter 7, though, we also look beyond Ontario to understand the nature of environmental regulation at present in more general terms. As noted, Chapters 5, 6, and 7 make up the third part of this book, and fit together under the heading of 'light-green' approaches to environmental sustainability. We spend time at the end of each of these chapters thinking critically about how the golf industry moved, beginning roughly in the 1980s, towards reflexive environmental stewardship, though it is at the end of Chapter 7 that these critical perspectives come together. Most of all, we suggest that golf's self-proclaimed leadership on environmental matters has been met by a desire among governments to find industry-friendly mechanisms for environmental regulation – one fits 'hand in glove' with the other. This has fomented what has been termed a 'post-political' situation whereby alternative, perhaps 'radical', ways of addressing environmental problems fall by the wayside in favour of light-green environmental strategies.

And yet Chapters 8 and 9 suggest that alternative perspectives still exist, even if they are not always valued. These chapters make up 'Part IV: The dark-greening of golf', which deals with responses to golf-related environmental issues that reflect a 'darker-green', or ecocentric, environmental approach. In Chapter 8,

entitled 'Anti-golfers across the world unite! Global and local forms of resistance to golf course development', we discuss golf-related protest movements, focusing on both global and local forms of protest activity. Much of our attention here is given to the Global Anti-Golf Movement, which emerged in the 1990s from the collaborative work of prominent environmental groups in East Asia. In the view of the Global Anti-Golf Movement, golf tourism (especially in developing countries) displaces indigenous peoples from their land, unduly impacts on local resources, disperses toxins (e.g. through chemical spraying), and, in the end, funnels profits towards transnational companies and away from local communities. And while golf course developers, designers, and managers increasingly make claims regarding their 'friendlier' environmental practices, the Global Anti-Golf Movement sees many light-greening practices as mere 'greenwashing': "nothing more than a hollow attempt to make golf courses appear less toxic than they are."³ When it comes to local protests, our attention turns mainly to original research we conducted on a resistance campaign in Menie, Scotland against a golf course proposed (and eventually built) by a group led by US businessman, and now presidential candidate, Donald Trump. This Scottish case is compelling for a number of reasons; what it tells us in large part is that protesters can (and do) take up their own range of tactics to present a persuasive case about golf's sometimes-negative social and environmental impacts.

Following this, in Chapter 9, entitled 'Organic golf "on the fringe": the potential and challenges of a chemical-free golf alternative', we focus on organic, or chemical-free, golf as another alter-golf response to golf-related environmental issues. It is here where we discuss our site visits to organic courses in Canada and the UK, and describe a more transformative approach to changing golf than that led by the mainstream golf industry to date. In Chapter 9 we also note how some organic golf proponents are interested not only in changing established golf industry practices, but in inspiring golfers themselves to judge the quality of golf courses differently. This might involve, for example, recognizing that pristine courses may not be 'healthy' courses and environments. We suggest that this sort of cultural shift is crucial if an organic, alter-golf movement is to take hold. Far from celebrating organic golf *tout court*, however, we close this chapter by acknowledging that organic golf is not immune to criticism (e.g. over the exclusivity of golf based on its high cost to consumers) and is not free of environmental concerns of its own. We suggest instead that organic golf is a tentative move in the right direction for the golf industry, one that should not languish 'on the fringe' of golf as it has to a great extent so far.

Finally, 'Part V: Conclusion,' gives our final thoughts on golf and the environment. This part of the book includes Chapter 10, 'Reflections, recommendations and minor utopian visions for a game we love.' In this final chapter we offer an overview of the main findings that emerged in our research and that we present over the course of this book. We also present a set of recommendations that are intended to inspire critical thinking on how to promote healthier and more ethical relationships between the golf industry and its numerous stakeholders, paying particular attention, of course, to golf's many environmental issues. We conclude the chapter and book by acknowledging the many relevant topics and issues we were unable or chose not to pursue and, in turn, by offering suggestions for future research on golf, the environment, and globalization. The 'greening of golf' is an ongoing matter, just as the *study* of golf and the environment should be ongoing too.

Notes

- 1 The trade publications studied here have in some cases undergone name changes over time. For example, *Golf Course Management*, the flagship publication of the Golf Course Superintendents Association of America (GCSAA), has been known in the past as *The National Greenkeeper*, *The Greenkeeper Bulletin*, *The Golf Course Reporter*, and *The Golf Superintendent*. The GCSAA itself has previously been known as the National Association of Greenkeepers of America, the Greenkeeping Superintendents Association, and the National Greenkeeping Superintendents Association (NGSA). The USGA's key publication is the *Green Section Record*. But the USGA has also published materials under other names, including the *Bulletin of the Green Section of the US Golf Association*, *Turf Culture*, and *Timely Turf Topics* (see Turfgrass Information File, n.d.b). For simplicity, we generally use the latest names for these trade publications and associations in the main text of this manuscript.
- 2 These are the insecticides chlorpyrifos, imidacloprid and trichlorfon (termed 'very highly toxic') and the herbicide 2,4-D (termed 'highly toxic').
- 3 For information about GAGM and an outline of its manifesto, see <http://www.antigolf.org/english.html>.