Design Solutions That Encourage Golfer Participation

by

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ABSTRACT

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The sport of golf has experienced a decline in number of participants over the past ten years due to social, cultural, and economic factors. An integrative literature review and key informant interviews identified the amount of time required to play, high costs, and level of difficulty as the principal contributors to this decline. Design guidelines were developed to directly address these limitations and increase participation.

The time required for a game of golf and the cost of construction and maintenance of courses can both be reduced by minimizing the number and severity of hazards, and locating them so they will be a challenge only for expert golfers. The level of difficulty and the pace of play can be remedied by a return to strategic golf design. Strategic design emphasizes risk and reward scenarios, and provides variation in shot values that appeal to all skill levels of golfers.
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Chapter One – Introduction

Overview

From the mid 1980s to the turn of the century the number of golfers grew 50%, from 20 million to 30 million golfers. However, since the sport’s plateau in 2000, golf has been experiencing a steady decline in number of participants (Beditz & Kass, 2010). This is primarily due to the economic downturn felt around the world. As golf is a recreational sport and not a necessity, it is often the indulgence left behind. Specific economic factors such as consumer confidence, cost of golf, unemployment rate, and real income are reasons why people aren’t golfing as much as before (Beditz & Kass, 2010). In comparison to the affordable public courses built in the 1960s, the more recently constructed courses are much more expensive to play due to private, gated locations, larger scale, and high-end daily fees.

There are additional social and cultural factors that play into the decline of participants. A typical round of eighteen holes takes approximately five hours to play. This does not include travel time, warm up time, or any post round beverages that are often consumed. By thoroughly understanding the factors that are deterring people from playing golf, alternative and modified golf course designs can be implemented into the framework of the sport to increase desirability. Directly addressing these limitations will encourage more people to play golf due to its improved convenience, affordability, and inclusivity.

Goal and Objectives

The goal of this research is:

- To identify design solutions to factors that are currently limiting golfer participation
The objectives of this study are to:

- Identify worldwide golfing participation trends and demographics
- Determine which global markets are thriving, and which are declining
- Isolate specific factors that are contributing to the specific market’s success or failure
- Identify specific economic, social and cultural factors that are limiting golfer participation in the previously determined declining markets
- Propose parameters, procedures, and design solutions to factors that are currently limiting golfer participation
- Consider the applicability of the design solutions to golf course developments worldwide

**Research Design**

The approach to this research combines information gathered from an integrative literature review with key informant interviews. Design guidelines derived from information gathered through the research will be developed for implementing alternative and modified golf course design elements into both new and existing golf courses. This study will use deductive reasoning to explore the possibilities of supplementing the framework of traditional 18-hole golf course design with modified alternatives that will directly address the limitations that are currently inhibiting golfer participation.

The research method chosen for this thesis will be entirely qualitative. Although a higher potential for bias exists with qualitative research this method will support depth of data and provide a very relevant understanding of the context being explored. The particular method of qualitative data collection in this study is key informant interviews.
The research framework that best describes the processes and objectives of this thesis falls within critical theory. Critical theory’s goal is action, and aims to solve pertinent problems in a given context and explores connections, overlaps, intersection and interferences between the three spheres of economic development, emotional life and culture (Buchanan, 2010). The golf industry as a whole is in decline, which is important enough to require collaborating efforts between researchers and stakeholders to uncover a solution. Critical theory challenges the status quo and stimulates change (Deming & Swaffield, 2011). A positive result of this study would be to provide golf course architects with alternative design solutions that challenge the practices of traditional 18-hole golf courses to create a more enjoyable, accessible, convenient, and inclusive sport.

### Methods

The general procedure of this study is depicted in the following sections:

- Scholarship of Integration
- Key Informant Interviews
- Development of Design Solutions
Scholarship of Integration

The characteristics of the integrative literature reviewed include information on design principles including form, routing, composition and elements of golf courses. The history of the game of golf including design precedents was explored. Literature on worldwide golfing population trends as well as the trends of specific principal golf markets was analyzed. This established where modifications were most useful and why. It also distinguished existing golf markets that are thriving and provided insights on their success. Finally the integrative literature
review isolated major economic, social and cultural factors that are currently inhibiting golfer participation worldwide.

**Key Informant Interviews**

**Selection Procedure:**

Eight key informants, all of whom are golf course superintendents, were interviewed to provide perspectives on what makes their golf course prosperous. The informant was chosen not based on their professional merit, but rather based on the golf course that employs them. Four Scottish and four Canadian courses were selected based on their unique historic, cultural, or economic features that have contributed to their sustainability, longevity, and success. The following describes the specific golf course selection method used:

1. The selected participants consisted of four Scottish, and four Canadian golf courses, with each corresponding superintendent voluntarily partaking in the interview process.
2. Each golf course had to contain a unique historical, social, or cultural element that has contributed to their success.

Some limitations of the selection process were found due to their implications of the methodological approach and procedure of this study. The informants interviewed did not provide a representative sample of all golf course superintendents. The number of informants was limited and directly corresponded to the amount of resources, time, money and availability.

**Formulating the Interview:**

After the selected eight superintendents volunteered to participate in the data collection, the following seven-step process was used to formulate the interview procedure (Babbie, 2009):

1. Thermalize – gather background information, clarify purpose.
2. Design – lay out the process, develop questions
3. Interview – conduct the interview
4. Transcribe – create the written text
5. Analyze – determine the meaning of the material
6. Verify – check reliability and validity
7. Report – tell others what has been learned

Interview Procedure:

A semi-structured, informal, personal interview is somewhat formal, and usually has an interview guide that is followed comprehensively. The guide was formatted to have introductory questions, opening questions, key questions and closing questions (Deming & Swaffield, 2011). The guide was formatted this way to navigate the interview in a naturally flowing manner.

The arrangement introduced the research background, and then the interviewee’s background. It then switched to a more formal section of the interview that focused on gathering information that directly relates to the research topic. Finally the session closed with more general, less intense questions. The interview format was somewhat conversational to allow the interviewee range to diverge and expand on questions to further their professional counsel.

The following criteria was consistently followed with all eight informants throughout the interviewing process:

1. The specific research purpose was initially withheld to avoid any biases the interviewee might have
2. The number of questions was limited in order to complete the interview and discussion session in under one hour
3. Questions were selected to represent the experience of the participants, meaning they are not required to have knowledge of other professional fields (Babbie, 2009)
4. Interviews were conducted at the professional’s place of work
5. To transform the interviews into a readable report that represents the informants’ professional perspectives, the sessions were hand recorded and then transcribed into a formal, written style text

Response Interpretation:

In understanding and interpreting the data collected through key informant interviews, an ad hoc method of analysis was used. A general understanding of the interview was attained though ad hoc techniques of analysis such as noting themes, seeing plausibility, making comparisons and contrasts, making metaphors and clustering (Miles & Huberman, 1994). The responses were specifically analyzed for the following elements:

- The informant’s perspective on the factors that contribute to a golf course's sustainability, longevity, financial prosperity and overall industry success
- Similarities, universals, and differences (Babbie, 2009)
- Ideals of conformity and renovation to keep up with modernization trends of the golf industry

Development of Design Solutions
Based on information gathered through the scholarship of integration and key informant interviews, synthesized design solutions were developed to address factors that are limiting golfer participation. The research revealed specific economic, social and cultural factors that are discouraging participation, and it also revealed upcoming industry trends that will influence future architectural decisions. Furthermore, fundamental design principles that influence opportunities and constraints of modifying traditional golf course design were revealed in the data collection portion of this study. A guideline was developed that states a specific problem, and provides a corresponding design solution. The design solutions were developed to satisfy the following:

- Directly address major factors that are inhibiting golfer participation through alternative or modified design principles
- Provide a synthesized guideline that will not detract from essential design principles required in all golf course design such as safety, routing, and playability

Limitations:

Although golf course architects may have the most knowledge and experience in suggesting what is the best design for a specific project, the owner of the property and those who are employing the architect have the ultimate say. Therefore although these guidelines might uncover the best practices and design alternatives, their implementation depends on if the management and owner of a golf course accepts them. Once the design is constructed and the architect moves on to the next project, the course’s superintendent is then placed in charge to uphold the design particulars. Therefore the integrity, maintenance, and upkeep of the design are then left in the hands of the superintendent.
Chapter Two – Scholarship of Integration

Introduction

The focus of this section is to understand why people aren’t golfing as much as before, and to isolate the main factors that are attributing to the reduction in participation. The literature reviewed is divided into two sections, the first being general understanding of the game of golf, and the second being a comprehensive understanding of the state of the golf industry today.

The first section will explore golf’s history, cultural significance, maintenance practices, design philosophies, and design principles. This information will be helpful for those who are unfamiliar with traditional golf course design, as these terms are referred to in both the key informant interview, and the design guideline sections. Thus, it is important to understand not only the different styles of golf course design, but also the corresponding design features, landforms, and hazards within each. Golf course maintenance practices were also explored to identify opportunities and constraints of implementing design modifications and alterations.

The second section will identify current population trends of golfers worldwide, and further isolate markets that are experiencing a decline in number of participants. Once the literature identifies specific geographic locations whose golfer populations are declining, it was then uncovered as to why. A variety of possible participation limitations were explored, such as economic, social, political, and cultural factors. Subsequently a look into the future trends of the industry was explored. This will aid in the development of the design guidelines and better prepare owners, builders, and architects alike with information and understanding on how to address the issues that the golf industry is facing.

There are extensive benefits associated with the game of golf, not only in economic and environmental stewardship, but also in social, health and wellness capacities. Golf employs 3.5
million people worldwide, and creates global revenues of 300 billion (Golf Advisory Practice in EMA, 2011). As a sport that contributes $68.8 billion to the United State’s Gross Domestic Product (National Golf Foundation, 2012), and $11.3 billion to Canada’s Gross Domestic Product (National Allied Golf Associations, 2012), golf deserves preserving and promoting.

Not only does golf create billions of dollars in revenue annually, but it also provides many health and wellness benefits as well. A walked 18-hole round of golf is approximately equal to 5-miles, and if carrying your clubs can produce a caloric expenditure of approximately 2,000 calories (Golf 20/20, 2011). There are many health benefits to walking that include lowering the risk of Type 2 diabetes, reducing stress, preventing heart disease, and decreasing the need for medication (Golf 20/20, 2011). Furthermore, golf significantly increases aerobic performance and core muscle endurance, and also provides significant increases in serum high-density lipoprotein and reduces cholesterol levels over time (Parkkari, 2000).

Golf has always been a very social game. Spending several hours with others on a golf course is a very rewarding experience, often increasing self-confidence, emotional strength, and focus (The Walking Golfer, 2008). The game of golf can further reduce anxiety levels and reinforce coping, all while building social capital through the friendship and networking opportunities that golf provides (Golf 20/20, 2011). Not only is golf very conducive to both a physically and mentally healthy lifestyle, it is also one of the few sports listed as a lifetime activity that can be played well into the later years of one’s life due to its relatively risk free nature (Golf 20/20, 2011).
PART ONE

Golf Course History

Although no concrete evidence exists as to where or who invented the game of golf, most historians conclude that it was the Scots who developed the game into the modern form it takes today (Jenchura, 2010). The earliest written reference to the game of golf in Scotland came in 1457 in the form of a decree written by King James II banning the sport, as it interfered with archery and other battle training practices (Jenchura, 2010). The earliest documented partaking of the game took place on the land that is now known as the Old Course. Unlike many other historical precedents, it was not built, but rather adapted from the existing Scottish landscape.

In the early days of the game, the golf course was simply a plot of working landscape in a rural environment that had no other agricultural or trade use. It has very sandy soil with limited vegetation, which is ideal for playing golf (Cornish & Hurdzan, 2006). It is located on the linksland, which is plainly the link between the sea and the arable ground (Joy & Phillips, 2004). Attempts were not made to mold the land or implement strategic placement of hazards; these elements were a preexisting natural presence (Hurdzan, 2004).

The function of a hazard is to create obstacles on the golf course to increase the amount of difficulty and penalize errant shots (Mackenzie & Trent-Jones, 1998). Many of the hazards and landforms found on today’s Scottish golf courses can be attributed not to a professional golf course architect, but to the indigenous grazing livestock. Sheep burrowing into the sandy soil to escape the harsh seaside elements were the originally designers of hazards known today as “bunkers” (Hurley, 2005). In the early years of golf in Scotland the land was not manicured to allow for short tight fairways, but was simply the result of hungry grazing sheep.
Although the game of golf had been firmly established in Scotland for many years, golf course development did not spread elsewhere until the later half of the nineteenth century (Graves & Cornish, 1998). It took so long for golf courses to develop elsewhere because when they tried to spread inland they encountered a substantial soil problem. At this point in time agronomy was virtually unexplored, and heavy soils unsuitable for golf were encountered inland. Golf course architects and other tools used to modify this element did not exist (Graves & Cornish, 1998). However, prior to the attempt to venture inland, golf slowly began to filter down the coast of Scotland into England, as the existing linksland did not need to be modified to accommodate a golf course.

In the late nineteenth century, golf had spread to North America. By 1919, Herbert Warren Wind, an American golf writer described the sport’s global transition “from an occult Scottish passion into a universal pastime pursued wherever grass sprouts, and sometimes where it doesn’t.” (McCormick & McGrath, 2006). The Golden Age of golf existed between 1910-1937, named such because many of the greatest course architects in the history of the game were at work during this period, creating some of the world’s most famous layouts (Shackelford, 1999).

Up until the early 1940’s golf holes were laid out based on the property’s existing conditions and landforms, with little to no earthmoving. However post WWII brought with it new and innovative technological advances in both machinery and high explosives that were adopted unreservedly by North American golf course architects (Hurdzan, 2006). With these new modernizations fully integrated into the design process, golf course architects of the mid 1940’s and beyond had access to powerful earthmovers and explosives that their predecessors
did not. This allowed for much faster, grander, and widespread golf courses production across the continent, and modern day golf architecture was born (Hurdzan, 2006).

**Principles of Design**

The average golf course occupies 150 acres of land and consists of approximately 16% non-turfgrass vegetation and 7% water bodies. This results in approximately thirty-five remaining hectares that may consist of forest, naturalized areas, or aquatic environments (natural or constructed), which are generally incorporated into the course layout for strategic and aesthetic purposes (Jackson, 2008)

Hurdzan (2006) has ranked the basic criteria for good golf course architecture as follows:

1. Safety – to golfers and adjacent land users
2. Aesthetics – the look, feel, and impression of the golf course
3. Tournament Qualities – match vs. medal play, accessibility for galleries
4. Flexibility – variation in length to accommodate players of all abilities
5. Fairness – severity of hazards and placement in order to define strategy
6. Shot value – variety in required shots and target lengths
7. Progression – sequence of holes and their associated shot values
8. Balance – equality in the distribution of par, shot values, and progression
9. Flow – the overall movements of golfer traffic
10. Maintenance Cost – long-term requirement costs, limitations, cost-benefit ratio
11. Construction Planning – projected total cost, limitations, cost-benefit ratio
It is very important that during any modification or alterations of existing 18-hole golf courses, principles such as progression, balance and flow are not disturbed. It is also essential that if the course routing changes, it is consistent with existing elements, themes and aesthetics of the original golf course (Hurdzan, 2006).

Although there are many different styles, preferences and types of golf course design, there are elements of consistency among them all. An extremely important component of the game of golf is playability. Playability concerns itself with maximizing fairness and suitability to accommodate a wide degree of skill levels, it is a constant balance between playability and difficulty (Fazio & Brown, 2000). Analyzing certain elements of the playing field such as difficulty of tee shots, quality of landing zone, placement of hazards, and probability of recovery will reveal the course’s level of playability (Hurdzan, 2006).

Having a course that falls within the middle ground of difficulty is ideal, as that will provide a high degree of enjoyment for the largest number of golfers (Fazio & Brown, 2000). A course that is too difficult for the average player will result in five hour or more rounds, lots of lost golf balls, and really high scores (Hurdzan, 2006). Therefore to avoid an overly difficult design, it is important to understand the elements that attribute to a course’s playability. The features within a golf course that most influence decision-making and shot selection are hazards, and it is critical to understand how hazards affect the spectrum of skill levels (Fazio & Brown, 2000). Hurdzan (2006) described the purpose of a hazard to “complicate or influence golf shot making within their confines, so that golfers wish to avoid them, and in doing so, create a strategy of play” (page #48).

A golfer’s handicap is a numerical calculation of a player’s skill level. The lower the person’s handicap, the better golfer they are considered. The majority of golfers are less skilled
high handicappers, thus it is extremely important to be aware of their habits and abilities during the design process. For example, providing fewer forced carries, wider landing zones, varied hazard placement, alternate routes, and greater margin for error will increase a course’s level of playability (Hurdzan, 2006). To successfully integrate alternative design features that will increase golfer participation, it is essential that these modifications do not inhibit playability, but ideally increase it.

Strategy is another significant universal principle of golf course design, and provokes risk-reward decisions. Depending on a golfer’s skill level, the strategic design of the course will provide certain options or routes that attract corresponding handicap levels. Similar to playability, strategy is dependent on the placement of hazards (Hurdzan, 2006). Strategy provides a variety of risk reward situations to be taken or passed up, which is how golf courses appeal to both low and high handicappers.

Each hazard on a golf course has a different degree of difficulty associated with it. Water and out-of-bound hazards are severe due to difficult or impossible recovery. Sand and rough hazards are less severe as they are more easily recovered from. Varying frequency and severity of hazards are used to defend the par of a golf course, providing enough challenge that scoring better than par is not easily achieved. It is the responsibility of the architect to decide what form a hazard will take, thus increasing or decreasing the playability and strategy of a particular hole. Architects should strive for a balance of playability and strategy, therefore understanding how to create a balance by using correct arrangement of hazards on a golf course is essential (Fazio & Brown, 2000).
Philosophies of Design

There are three major types of design philosophies within golf course architecture that correspond to a specific era in time. Penal philosophy originated in 1850, followed by strategic philosophy in 1875, and finally heroic philosophy in 1900 (Hurdzan, 2006). It is not uncommon to find elements of all three philosophies on a single golf course in many modern day designs. The design philosophy of each individual golf hole is defined by where the hazards fall in the play line from tee to green, and how much the hazard complicates shot making given it’s location (Hurdzan, 2006).

The penal design philosophy began to evolve amongst architects in the mid nineteenth century. It was the one of the first philosophies of golf course design because it required very little construction to achieve maximize impact (Hurdzan, 2006). Furthermore, the early golf course architects were very competitive players, and saw it as an opportunity to design the hardest golf courses possible to easily distinguish the best players (Hurdzan, 2006).

A hole is deemed penal if the only way to reach the green in regulation involves hitting a shot that will lead to a severe penalty if misplaced. The penalty is usually one that is impossible to recover from, such as water, or out-of-bounds (Trent-Jones, 1993). This is the most sever design philosophy of hazard placement, yet the easiest to implement on a golf course. It provides small landing areas that are often defined or surrounded by hazards that must be carried (Hurdzan, 2006). The more difficult a recovery shot is from a hazard, the more penal the golf hole. Robert Trent-Jones Jr. gives the following example of a penal golf hole in his book *Golf by Design*:
The 132-yard par-3 seventeenth hole at the Tournament Players Club in Ponte Vedra, Florida: As the shown in figure 1, a successful shot on this par-3 must avoid water everywhere. Any shot that is short, long, or off line will end up costing the player a severe penalty. This is a penal hole because no other route exists to reach the green (Trent-Jones, 1993).

Strategic golf design was developed when a new breed of golf course architects, who weren’t professional players, deemed the penal style of design too difficult and far less fun than courses that gave golfers shot making options. 1875 saw the beginning of a new style of golf hole that allowed for wider landing zones for higher handicapped golfers, but also rewarded
more skillful players that risked their first shot with a less complicated second shot (Hurdzan, 2006).

The theme of the strategic design philosophy is risk and reward. This style of design offers the player many routes to the green, which allows for unlimited variation. The architect of strategic design will attempt to create as many different lines of play as possible, each with different shot values that appeal to all skill levels of golfers (Hurdzan, 2006). Robert Trent-Jones Jr. gives the following example of a strategic golf hole in his book *Golf by Design*:

![Figure 2.2. The strategic 8th Hole at Muirfield Golf Club in Scotland (Trent-Jones, 1993)](image)

The 444-yard par-4 eighth hole at Muirfield Golf Club in Scotland is a classic strategic hole. It is a dogleg right with a series of fairway bunkers guarding the right side of the fairway. Long hitters can reduce the yardage by cutting the corner but must contend with the bunkers. Short hitters or intermediate players can play to the left side
of the fairway the entire length of the hole and avoid sand, but this strategy results in a longer second shot to reach the green (Trent-Jones, 1993).

The third major philosophy is a variation of strategic design, and took hold at the turn of the twentieth century. Heroic design presents the golfer with a large hazard, and an equally large landing zone, giving them the choice of how much of the hazard they would like to carry (Hurdzan, 2006). The theme of heroic design encourages the golfer to bite off as much as they can chew. This allows for a challenging hole for all levels of golfers, enabling them to select a varied amount of risk based on their corresponding skill level.

The decisions that a heroic golf hole presents to a player are the most complex and nerve racking. This style of design represents the essence of mental golf by illuminating a clear choice offering different risks and rewards for shots played (Trent-Jones, 1993). To better understand the elements of the heroic golf philosophy, Robert Trent-Jones Jr. gives the following example in his book *Golf by Design*:

![Figure 2.3. The Heroic 18th Hole at Pebble Beach Golf Club in California (Trent-Jones, 1993)](image-url)
The 540-yard par-5 eighteenth hole at Pebble Beach Golf Links in California is universally regarded as one of golf’s truly heroic holes. It features not one but a pair of heroic choices generated by the presence of the Pacific Ocean down the entire left-hand side. The tee shot can be played over as much water as you dare to improve your angle and shorten the distance to the green. Your second shot also can take the brave line over another corner of the ocean, with considerable distance and angle reward if successful. Alternatively, you can follow a safer route along the right side of the hole, at the expense of having to cover a greater distance.

In summary, penal design requires forced carries, strategic design offers many routes into the green, and heroic design lets the golfer decide how much forced carry they can handle. A blended design provides an appealing balance and rhythm to the routing, engaging the golfer in a decision-making process, and providing unlimited ways to play the game (Trent-Jones, 1993).
PART TWO

International Supply Concentration

To further understand what the golf industry’s global market looks like in terms of population, trends, and limitations, this section of the study will explore the specifics of the world’s three highest concentrated golfing markets. Depicted by the international supply map in figure ----, European, North American, and Asian markets will be the focus of the integrative literature review. To further explore all 199 golfing countries would be ideal, but not within the scope of this research due to time, money and relevance restraints.

![International Supply Concentration Map](image)

Figure 2.4. International Supply Concentration (Beditz, 2012)

There is little doubt that a strong link lies between the state of the economy, and the success of golf as a participation sport, which is evident in all golf markets around the world (HSBC, 2012). This ideal will be further explored in hopes of then uncovering specific reasons
as to why the number of golf participants is declining.

**Golf Participation in Europe**

In 2011 European golf experienced its first fall in participation in over twenty years (Golf Advisory Practice in EMA, 2013). Prior to the decrease, there were nearly 4.4 million registered golfers, which equates to a 0.73% participation rate, yet the 2011 season end saw a net loss of 46,000 registered players. The country that experienced the most significant fall was the UK & Ireland, where the number of golfers has been declining since 2007 (Golf Advisory Practice in EMA, 2013).

The supply and demand within the European golf market is very concentrated, with 94% of all golfers, and 92% of all golf courses located in eleven countries. Within that concentration, the UK & Ireland provides 29% of all players, and 44% of all golf courses (Golf Advisory Practice in EMA, 2013). Due to the high concentration of golfing participants in only eleven countries, it is evident that more than half of the countries in Europe are still in relatively early stages of golf development. Figure 2.5. depicts the maturity of Europe’s golf markets. This is based on the size of population per golf course, and the portion of the population playing golf (Golf Advisory Practice in EMA, 2013).

![Figure 2.5. European Golf Market Maturity, 2013 (Golf Advisory Practice in EMA, 2013)]
Furthermore, figure 2.5. shows that the market supply and demand ratio in Europe is fairly balanced. In a few cases like that of Italy and Portugal, the supply outweighs the demand.

A few countries such as Germany and the Netherlands in particular, have counterbalanced Europe’s overall decline in golf participation by +10,800 and +7,600 respectively (Golf Advisory Practice in EMA, 2013). It is also said that these two countries are the flagship markets for female participation. It may not be a coincidence that the market that declined the most, the UK & Ireland, has the third largest ratio of male golfers, and the market that increased the most, Germany, has the fourth lowest ratio of male of all European countries.

However, without an increase in demand throughout Europe, their overall golf market will continue to stay stagnant. Ignoring the suggestions of many European governing bodies, 30-40% of golf club operators increased prices in 2011 rather than introducing youth and family promotional offers (Dempster, 2013). Over half of the clubs have not enhanced marketing efforts, nor have they capitalized on opportunities provided by social media and online promotion (Golf Advisory Practice in EMA, 2013). In the report issued by the Golf Advisory Practice in EMA in 2013 titled *Golf Participation in Europe 2013*, the stagnation of Europe’s golf market can be attributed to two main factors:

- Significant decrease in registered golfers in Europe’s biggest market: The United Kingdom & Ireland
- Lack of dynamic growth in Europe’s emerging markets: Eastern Europe and South-East Mediterranean

Despite the potential that Eastern European countries poses, the growth in demand for golf was insignificant in 2011. The lack of dynamic growth in Europe’s emerging Eastern
Europe and South-East Mediterranean market’s can be attributed not only to economic hardship, but also to weak governmental support and more severe regulations that restrict the number of new golf projects (Golf Advisory Practice in EMA, 2010). Although domestic interest in golf is continually increasing, the supply growth of golf courses has been stunted due to the bureaucratic difficulties that characterize these emerging countries (Golf Advisory Practice in EMA, 2010).

Subsequently, the decrease in registered golfers in the UK & Ireland can be attributed to approximately 228,000 players cancelling their membership. Unlike the rest of Europe, golfers in the UK & Ireland do not need to be registered to play; only those who have memberships are recognized as participants. Thus, because they are no longer members, they do not contribute to the statistical number of participants (even though they likely still play golf). Forgoing a membership to play on a green fee or daily pay-and-play basis is an emerging trend in the United Kingdom and Ireland (Golf Advisory Practice in EMA, 2013).

To understand why memberships are declining in the UK & Ireland, we must explore changes in consumer behavior. Just as it’s happening with gym memberships and political parties, more choices are encouraging consumers to be picky and nomadic by discouraging them from being restrained to one club (Dempster, 2013). Hamish Grey, the Scottish Golf Union’s chief executive states, “If we continue to offer what we all recognize as traditional memberships, as a take-it-or-leave approach, then more golfers are going to say ‘no’ to that. They want flexibility and that varies through life. Whether they have a family and when they may be empty nesters when they have more time later in life.” (Dempster, 2013)

The financial downturn, inclement weather, increased competition for people’s leisure time, the number of courses in Scotland, and the time it takes to play a full round have been
cited as the most popular reasons for the problems the clubs are facing. The pressure on Scottish golf clubs has got so strong that the Scottish Golf Union has reiterated its call that no more 18-hole venues should be built in the country (Dunsmuir, 2013).

Overall, although experiencing a slight stagnation, golf participation in Europe is expected to heed recovery upon the upturn of the Eurozone and world economy. Additionally by addressing issues of governmental support and severe regulations in emerging markets will also increase the number of participants in Europe. Finally, if the overall population of Europe’s golf industry is to grow, they must attempt to reinvigorate their number one market, the UK & Ireland. Although the decline in golfer population has been partly attributed to uncontrollable factors such as inclement weather and number of existing golf courses, other controllable factors are of higher concern. These limitations such as time it takes to play, can be resolved through alternative or modified golf course architecture.

**Golf Participation in Asia**

The trends that shape the future of golf are usually closely paralleled by the trends that are shaping the future of the planet, including the global shift towards Asia. In less than a decade the number of golf courses in China has tripled (HSBC, 2012). HSBC reports that enthusiasm for golf is higher in China and India than it is in central golf markets such as the United States and United Kingdom. Because of this large interest and investment, they further suggest that golf’s growth in Asia will be sustained. Golf has emerged as the backbone of high profile tourism investment in many parts of the globe. As such, Asia has capitalized on installing some of the world’s most profitable courses, insuring their spot as the world’s fastest growing golf tourism market (HSBC, 2012).
As the global economy continues to invest in Asia, the middle class population gets richer and begins to turn towards luxury products and leisure activities (HSBC, 2012). These emerging target markets of consumers, particularly in China and India, now have more money, and they are investing in golf as a leisure pursuit for their children. The sport of golf in China has shifted from official disapproval by the Communist Party in the 1960s, to becoming aspirational in the 1980s (HSBC, 2012). All across Asia golf academies for children as young as five are quickly growing in popularity. Some parents are willing to invest $43,940.00 USD annually on lessons for their children (HSBC, 2012). Additionally, China’s state run Xinhua news agency identified a school in southern China that offers free golf training to kindergarteners. In 2007 The Futures Company found that Chinese parents identified golf as an invaluable teaching tool, able to impart good decision-making and self-confidence to their children (HSBC, 2012).

Golf has increasingly grown to become a symbol of status throughout Asia. It provides the nation’s elite with both novelty, and prestige. Between 2010 and 2020, Asia is expected to double its share of global middle class consumption. It also expects to have 98 million middle class households by 2015, compared to 52 million households in 2010 (HSBC, 2012). This produces an increase of 46 million middle class households looking for leisure activities to dispense their newfound revenue. Due to its status, novelty, prestige, and relatively recent government accreditation, golf sits in an ideal position to capture a large portion of said new target market. Similarly, India’s middle class is predicted to grow from 32 million to 50 million by 2015, further compounding the need for leisure activities (HSBC, 2012).

The recent addition of golf into the Olympics as a competitive sport prompted Asian nations, China in particular, into action (HSBC, 2012). It is inherent in the Chinese culture to
place the Olympics in extremely high regard, which undoubtedly increased golf’s appeal to a nationalistic level. This Olympic addition has encouraged the Chinese government to regulate, subsidize, and spend heavily on creating top-notch golf courses, training facilities, and program initiatives in hopes of competing for more Olympic medals (HSBC, 2012).

There is additional evidence of golf’s shift from West to East when looking towards the trends of the Professional Golf Association (PGA). The emerging strength of young Asian players is substantial; with the Chinese golfer Andy Zhang becoming the youngest player to ever qualify for the US Open, at the age of 14 (HSBC, 2012). Lee Westwood, a past World #1, was quoted predicting that he “wouldn’t be surprised to see three or four of the World’s Top 10 from Asia by 2020”. Furthermore, as a clear sign of how the golfing map is shifting, the World Golf Championship, which is always played in Europe and the United States, is now being played in China (HSBC, 2012). This tournament is a world-class event that hosts the world’s top players, and is being played in China, a look into the future of professional golf’s projection.

Subsequently, just as Germany and the Netherlands are fosterers of female participation in Europe, Asia has become the centre of women’s immersion, particularly in professional golf (HSBC, 2012). South Koreans currently dominate the Ladies Professional Golf Association (LPGA). This is in part due to the number of core golfers (8 rounds or more/year) in South Korea now equaling the number of core golfers in America (Ferguson, 2013). An interesting statistic when comparing South Korea’s population of 48.5 million to that of the United States’ population of 307 million.

The golfing population in Asia is growing faster than anywhere else in the world. This is not to say that Asia is doing things better than countries in a declining or stagnant state, but can simply be contributed Asia’s recent emergence in the golf market. It is difficult to compare
Chinese and Indian statistics to countries that have already fully matured in the golf industry, as have North America, the UK, Scandinavia, and most recently Japan in the early 1990s. Rather China’s economy is now strong enough to begin to mature within the golf industry. In terms of using China or India as an exemplary model for increasing golfer participation, there are no revolutionary design philosophies or principles that can be instituted in other areas of the globe. They are building the same quality and quantity of golf courses as was done in North America in the early twentieth century, only one hundred years later in congruence with their own economic boom.

By 2030, much of the world’s population growth from seven billion to eight billion people will be in Asia (HSBC, 2012). This presents an interesting effect for land use: cities will expand beyond their current boundaries, thus pushing golf course along with the boundaries, further from the city. Golf will become harder to reach, and will increase the travel time and add to the already strenuous amount time it takes to play golf.

Golf currently remains a symbol of status among the wealthy in Asia, provided by the extensive amount of exclusive resorts and high-end golfing compounds. The nations average initial membership fees are 50,000.00 USD, with the average weekend green fee resting around $150.00 USD (HSBC, 2012). If golf is to sustain it must re-focus its energy to become truly inclusive. Although it is predicted that the centre of professional golf will move towards Asia with bigger sponsorships and purses, the amateur sector of golf in Asia still needs improvement. For golf to reach peak participation in Asia, it must be open to subsidized green fees and public golf courses to maximize accessibility.
Golf Participation in North America

Since 2006, the number of core North American golfers has fallen between 3-4.5% every year. Furthermore, the number of golf courses that are closing has significantly outweighed the number of courses that are being built (Ferguson, 2013). This downward trend is not only prevalent on the amateur level, but has regressed into the professional level as well. In 1986 North American golfers made up 60% of the Top 100 players in the World Golf Rankings (Ferguson, 2013). The 2014 rankings show that North Americans comprise 40% of the Top 100 players, with 39% of them being American, and 1% being Canadian. (Professional Golf Association, 2014).

North American golf experienced three periods of rapid growth during the twentieth century. The first major golf course development came in the 1920s when private golf courses were built for the elite upper class. The second came in the 1960s when public golf courses were built to supply the demands of the emerging middle class. And the final major growth period came in the 1990s in anticipation of the Baby Boomer generation whom we were expected to play more often as they aged (Hueber, 2012).

USA:

According to the National Golf Foundation’s article Golf Participation in America, 2010-2020, the number of golfers in the United States peaked in 2003 at just over thirty million. Aging baby boomers took up this sport because it was less strenuous, however the amount of time they were willing to commit to the sport became secondary to other responsibilities. With children and demanding jobs, they found it increasingly hard to devote five hours it takes to play 18-holes (Geer, 1996). Since 2000, the American golf industry has experienced significant
decline in the number of golfers, the number of golf rounds, and the number of golf courses. (National Golf Foundation, 2012). Further research conducted by the National Golf Foundation (Beditz & Kass, 2010) shows that time with family and time at work are now the two main competitors of golf. Starting in the mid 1990s, developers built thousands of new courses in the United States, but one after the other, the Internet bubble, 9/11, and the financial crisis greatly depleted Americans' disposable income (Vieira, 2012). Hundreds of golf courses have closed in recent years. The children of baby boomers have less time and money than their parents, and little interest in golf (Vieira, 2012).

The US golf economy experienced an overall decline of 9.4% from 2005-2011. The golf industry fell from generating $75.9 billion to $68.8 billion, resulting from a significant reduction in golf real estate and capital investment, including golf course construction (National Golf Foundation, 2012). The housing market crash and the economic recession of 2007-09 severely impacted the construction of new golf residences. In response to the weakened economic situation, golf owners and operators did not make nearly as many capital investments as years prior (National Golf Foundation, 2012).

Reported in *Golf Participation in the US – 2012 Edition*, The National Golf Foundation conducted a large-scale survey of over 20,000 Americans regarding golf participation in an attempt to isolate the main barriers of participation from the consumer’s perspective. The NGF has consistently found that the top three barriers to golfer participation are (National Golf Foundation, 2012):

1. Golf is too expensive
2. Golf is too difficult
3. Golf takes too long to play
Canada:

The Canadian golf industry provides an estimated 11.9 billion of the country’s gross domestic product. Of the 340,000 people that golf employs, 43% are students (Blackwell, 2012). Not only is golf the highest participation sport in Canada, but it also has the most golf courses per capita than anywhere else in the world (Blackwell, 2012). In an interview conducted by the Globe and Mail in August 2012, the president of Golf Canada, the country’s governing body, Diane Dunlop-Hébert predicts that although the economic downturn and poor weather conditions have deterred recent golfer participation, the coming years possess an opportunity to bring people back to the game. Most notably through increased development programs that encourage children and families to play golf together (Blackwell, 2012).

Canada is stagnant and did not experience any growth in golfer participation in 2012. Among the 5.7 million Canadian golfers, the number of people entering the game is equal to the number of people leaving the game (National Allied Golf Associations, 2012). Although Canadian women have expressed interest in the game, the group as a whole statistically states, “the game is not worth the expense” (National Allied Golf Associations, 2012). Canadians are finding it difficult to overcome the time, money, and image challenges that “old and traditional” golf insinuates (National Allied Golf Associations, 2012).

The largest portion of lapsed golfers is surmised from those who fall in the 45-59-year age range. They have become disillusioned with the game due to frustration with their play - not getting better and not growing their game, as well as frustration with the game – too hard to book tee times and pace of play rules (National Allied Golf Associations, 2012). They are the traditionalist and purists who do not like change. When a golfer becomes frustrated with the
game, pride, inspiration, and enjoyment are lost. Thus making it very easy to let the challenges of time and money drive you away from the game.

The current population of Canadian golfers follows closely to the Pareto Economic Principle, better known at the 80-20 rule. This law of the vital few says that for many events, approximately 80% of all the effects come from 20% of the causes (Kaplow & Shavell, 1999). The majority of rounds are being played by 26% of golfers (National Allied Golf Associations, 2012). Although golf remains stable, a potentially detrimental statistic reveals that 74% of those 5.7 million golfers are ambivalent to the game, meaning they are in the mind set that they can easily take or leave the game on a whim (National Allied Golf Associations, 2012). There is a large disconnect between occasionally participating in the game, and taking the next step to actually becoming engaged in the game. This engagement can take many forms such as taking lessons, volunteering, following, subscribing, practicing or attending tournaments. The Canadian Golf Consumer Behavior Study (2012) deems engagement an essential part of golf’s survival; more engagement, more spending.

The “engaged” portion of the Canadian golf industry is a small segment of less than 20% of golfers (National Allied Golf Associations, 2012). They are avid, frequent, and life long players. They believe the cost of golf to be justified, and typically play at private or semi-private clubs. 74% of Canada’s “engaged” golfers are male, and possess a large number of executives and professionals (National Allied Golf Associations, 2012).

The typical make up of Canadian golf can be broken down to a male dominated, well-educated, high-income sport, popular among executives, professionals, management, trade workers and the retired. However there are a few areas available for potential growth. The game reflects very little ethnic diversity, which can be seen as an opportunity for growth due to
Canada’s changing ethnic demographic. Additionally, approximately 6.5% of Canadian golfers leave private or semi-private clubs annually (National Allied Golf Associations, 2012). This could create a large potential for a growth opportunity in public golf courses. Whitney Crouse, founder of Affiniti Golf Partners - a golf management company that emphasizes that it’s not your father’s golf club anymore, is optimistic in saying that people will come back to the sport “once the game gets cheap enough and courses are reshaped to become easy enough.” (Western Turf, 2012).

**Participation Limitations Summary**

European golf participation recorded its first net loss of golfers in 2011. However Europe’s largest golfing nation, the UK & Ireland, has been experiencing a decrease in registered golfers since 2007. A large increase in golfer participation in Germany and the Netherlands has drastically counteracted Europe’s overall decline. These two nations are deemed the flagship market for female participation. The stagnation of Europe’s golf market can be attributed to two main factors:

1. Significant decrease in Europe’s biggest market: The United Kingdom & Ireland due to:
   - Large trend moving away from memberships and towards pay-and-play green fees
   - Financial downturn
   - Inclement weather
   - Increased competition for people’s leisure time
   - Number of golf courses in Scotland
   - Time it takes to play a full round
2. Lack of dynamic growth in Europe’s emerging markets: Eastern Europe and South-East Mediterranean due to:

   - Economic hardship
   - Weak governmental support
   - Severe regulations that restrict the number of new golf projects
   - Bureaucratic difficulties

The golfing population in Asia is growing faster than anywhere else in the world. At an annual growth rate of 15%, Asia has over 9 of the world’s 60 million participants. China has emerged in the forefront as Asia’s largest growing golf tourism market, wherein less than a decade the number of golf courses has tripled. Such a rapid interest in the emerging Asian market is due to:

   - The global economy continues to invest in Asia, increasing the number and wealth of the middle class population
   - Increased standard of living
   - Rising purchasing power
   - Greater willingness to spend on leisure activities
   - Investing newfound wealth in golf, as it is a symbol of the elite and prosperous

The number of core (8 or more rounds/year) North American golfers has fallen between 3-4.5% every year since 2006. The United States golf industry has experienced consistent
decline in the number of golfers, the number of golf rounds, and the number of golf courses built for the past 12 years. The top barriers to golfer participation in America are:

- Increased amount of time spent with family
- Increased amount of time spent at work
- Golf is too expensive
- Golf is too difficult
- Golf takes to long to play

Although golf is the highest participation sport in Canada and it also has the most golf courses per capita than anywhere else in the world, it is experiencing stagnation. Unlike that of Europe or the United States, the Canadian golf industry is not experiencing a decline in golfer participation, rather the number of people leaving the game is equal to the number of people joining the game. A few reasons for people leaving the game are as follows:

- Economic downturn
- Poor weather conditions
- Difficult to justify the cost of golf
- Time it takes to play golf
- Overcoming the image associated with “old and traditional” golf – want a game capable of changing with the times
- Frustration with play - not getting better and not growing their game
- Frustration with the game – too hard to book tee times and pace of play rules
- Current designs are not easy enough
Participation Limitations Conclusion

There are limitations uncovered in the scholarship of integration that are beyond the scope of a golf course architect’s professional reach. For the purpose of this thesis, these limitations will be isolated and left aside in order to focus on issues that a golf course architect actually has control and influence over. Components that have limited golfer participation in global markets such as economic hardship and inclement weather are much beyond the control of an architect. Although uncovered in the integrative literature review to have contributed to the decline in golfer participation, the following limitations will not be explored further due to their uncontrollability:

- Economic hardship
- Inclement weather
- Number of existing golf courses
- Weak governmental support
- Severe regulations that restrict the number of new golf projects
- Bureaucratic difficulties
- Increased competition for people’s leisure time
- Increased amount of time spent with family
- Increased amount of time spent at work
- Trend moving away from memberships and towards daily green fees
- Overcoming the image associated with “old and traditional” golf – want a game capable of changing with the times
- Frustration with the game – too hard to book tee times and pace of play rules
Although many of these listed above are easily identified as limitations that cannot be controlled by a landscape architect (such as inclement weather, number of existing golf courses, and economic hardship), there are a few that required further consideration to insure they could not be affected. There are limitations that are under the responsibility and control of the ownership or management of a golf course, not the architect. For example, if it is too hard to book tee of times it may be because there is an excessive amount of play that the course, or more likely the amount of time separating the tee times is not ideal. Management should consider a seven to eight minute interval between groups rather than ten (Blackwell, 2012). Overcoming the image associated with golf is a marketing, promotion, or public relation responsibility, outside of an architect’s reach.

However the scholarship of integration did uncover significant limitations to golfer participation that are entirely in the realm of control extended to a golf course architect. In order to create the largest impact on the widest breadth of the golf design industry, the issues that this research will subsequently focus on are only those in reach of golf course architects. Again the goal of this research is to develop a guideline for golf course design that addresses factors that are currently limiting golfer participation, and to do so we must further isolate only the golfer participation constraints that an architect can solve. The constraints resolvable by a golf course architect are as follows:

- It takes too much time to play golf
- Golf is too difficult
- Golf is too expensive – difficult to justify the cost of golf
- Frustration with play - not getting better and not growing their game
Time

The amount of time it takes to play golf was listed as a participation constraint in all three of the globe’s largest golf markets: The UK & Ireland, USA, and Canada. All of which are experiencing an overwhelming decline in golfer participation. Golfers and non-golfers alike have attributed their decreased interest in the game to the burdensome time commitment it requires (Hueber, 2012). Ninety percent of people surveyed by the National Golf Foundation said slow play is the biggest factor in taking away from their enjoyment of the game (United States Golf Association, 2103).

You can decrease the amount of time it takes to play golf by increasing the pace of play on the course (United States Golf Association, 2103). The time it takes to play a traditional round of 18 holes is approximately 4.5 hours. However there are many factors that can influence this time period, often increasing the length of time rather than making it more efficient. Pace Manager Systems pace rates individual golf courses to establish a reasonable time for a foursome to complete 18 holes. The factors that influence playing time are unique to each golf course (Yates, 2011). The factors that influence pace of play are:

1. Management policies and practices (choosing optimal starting intervals of seven to ten minutes)
2. Player behavior (playing ready golf, length of pre-shot routine, walking or riding)
3. Player ability (lower handicappers will play quicker due to fewer lost balls and number of shots taken)
4. Course maintenance and setup (Superintendents decide the length of rough, amount of fairway, pin positions, and tee marker positions)
5. Course design (playing length, height and location of rough, severity and location of hazards, and tee-to-green distances, number of par 3, 4, and 5, as well as total par)

**Difficulty**

The level of difficulty of existing golf courses is another prominent limitation in golfer participation, as it was listed as an impediment in both the United States and Canada. The reason that difficulty was not sited as a limitation in European markets is because they did not experience a period of growth fueled by real estate development similar to that in Canada and the United States during the 1990s.

The issue of golf courses being too difficult originates back to the golf industry’s third major growth period in North America, which started in 1990 and peaked in 2000. This era of golf course development was heavily subsidized by real estate development. This created a distinctly different type of golf course with a larger footprint to maximize frontal lot footage that commanded premium prices for their fairway lots. Golf course footprints grew to approximately 175-200 acres to allow lots to be sold on both sides of the golf hole (Hueber, 2012).

This era of growth also brought with it the most difficult golf course designs of the century. The conventional wisdom that big name architects would attract more people to invest in their golfing communities was customary (Hueber, 2012). And with championship designers came championship difficulty. During this time of “bigger is better”, architects had a vested income and interest in designing championship style golf courses that would make their way into competitive national rankings, which were highly correlated with difficulty (Hueber, 2012).

Of the ten longest golf courses in the world, all but one was built between 2001 and 2009 (Golf Gaga, 2011). The world’s longest golf course is located in Lijiang, China, and is 8548 yards at
its longest. Built during the peak of the bigger is better movement, this golf course is the product of indulgence in the bigger is better mentality of the turn of the century.

The U.S. Open is one of five major championships on the Professional Golf Association (PGA) Tour, and ranks among the hardest golf tournaments in the world (United States Golf Association, 2013). The United States Golf Association (USGA) is the governing body of golf in the United States as well as for this event, and aims to make this tournament the “most rigorous examination of golfers…testing all forms of shot-making, mental tenacity, and physical endurance.” (United States Golf Association, 2013). The factors that the USGA takes into account while determining the difficulty of a U.S. Open Championship are as follows (United States Golf Association, 2013):

1. Length, variation and playing characteristics of individual holes
2. Length of overall golf course relative to total par
3. Teeing ground locations (i.e., angles of play, variation of distance)
4. Fairway width and contours
5. Fairway firmness and speed
6. Green speed relative to percentage slopes and contours of the putting greens
7. Putting green firmness
8. Rough height, density and stages of severity
9. Bunker preparation (i.e., create challenge of recovery)
10. Green surrounds (e.g., closely mown areas vs. primary rough)
11. Hole locations (relative difficulty, balance in location of left vs. right, front vs. back of green, anticipated wind, anticipated length of approach shot)
Cost

The expenditure associated with golf was found to be a participant deterrent in both Canadian and American markets, often citing the game as difficult to justify the cost. Not only did the bigger-is-better mentality of the 1990s greatly impact golf’s level of difficulty, but also had a profound impact on the cost of building and maintaining a golf course. All of whose augmented costs are ultimately passed on to the consumer. Fazio (2000) highlighted how the cost of building and maintaining a golf course has changed from 1960-2000. Beyond the costs of regulations, permits, and environmental approvals that did not always exist, the most extreme increase in costs has evolved in the construction and maintenance departments. In the 1960s, the cost of building and 18-hole golf course was between $190,000-$380,000, and by 2000 it had increased to $3.8M-$7.6M (Fazio & Brown, 2000). Today the cost of building an 18-hole golf facility can cost upwards of 10 million dollars (Moore, 2013). This increase in cost is due the modernization of design philosophies and principles that contemporary bigger-is-better, North American architects adopted unreservedly. Factors such as erosion control, earthworks, shaping, irrigation, grassing, and landscaping simply were not part of the design process until the mid 1900s. The traditional Scottish design mentality of a golf course forming through grazing of sheep, unrelenting wind, and pounding sea were eradicated. Every element of a North American golf course had been designed, shaped, contoured, planted, and irrigated; all of which cost money.

In an attempt to uphold the designer’s level of precision and the player’s expectation of Augusta-like conditions, maintenance costs have increased alongside building expenditures. Instead of having a maintenance crew of four to eight people in the 1960s, the golf courses built
in the 1990s require a crew of up to forty people (Fazio & Brown, 2000). Annual maintenance costs grew from $50,000-$100,000 in the 1960s, to $750,000-1.2M in the 2000s (Fazio & Brown, 2000). Today’s modern North American golf course not only has a larger plot of land to maintain, but the standard of maintenance requires much more detail and thoroughly manicured precision. The compounding of these high standards set by designers and golfers alike has dramatically increased the cost of building and operating a golf course, which is ultimately passed down to the consumer. Some suggestions for new technologies and maintenance practices that can help make golf more affordable include (Moore, 2013):

1. When preparing to build the course, select a site that requires as little earth-moving as possible
2. During construction, keep steep slopes to a minimum
3. Select a design that requires less trim work
4. Build fewer sand bunkers -and more grassy hollows
5. Build agronomically sound, sensible greens
6. Plant the right grasses throughout the course
7. Establish reasonable maintenance standards throughout the course
8. Irrigation system design
9. Design and build courses that can be easily walked
Scholarship of Integration Summary

Philosophies of Design

There are three major types of design philosophies. The design philosophy of each individual golf hole is defined by where the hazards fall in the play line from tee to green, and how much the hazard complicates shot making given it’s location (Hurdzan, 2006). Penal philosophy originated in 1850, and is the most sever and penal of the philosophies. Strategic golf design was developed in 1875 when a new breed of golf course architects, who weren’t professional players, deemed the penal style of design too difficult and far less fun than courses that gave golfers shot making options. Finally heroic philosophy presents the most complex and nerve racking decisions to a golfer. This style of design that emerged at the turn of the twentieth century represents the essence of mental golf by illuminating a clear choice offering different risks and rewards for shots played (Trent-Jones, 1993).

Architects should strive for design features that balance the principles of playability and strategy. Playability concerns itself with maximizing fairness and suitability to accommodate a wide degree of skill levels, it is a constant balance between playability and difficultly (Fazio & Brown, 2000). Strategy is another significant universal principle of golf course design, and provokes risk-reward decisions. Depending on a golfer’s skill level, the strategic design of the course will provide certain options or routes that attract corresponding handicap levels. Both playability and strategy are dependent on the placement of hazards; therefore understanding how to create a balance by using correct arrangement of hazards on a golf course is essential (Fazio & Brown, 2000).
State of the Golf Industry

Two of the world’s largest golf markets, North America and Europe, are experiencing a decline in the number of golfers. The third largest golf market in Asia is growing faster than anywhere else in the world at an annual growth rate of 15%.

Whereas the golfing population in Canada remains stagnant, the United States golf industry has experienced consistent decline in the number of golfers, the number of golf rounds, and the number of golf courses built for the past 12 years. The decline in worldwide golfing population can be attributed to many factors, most of which golf course architects do not have any control over. There are three main limitations that the scholarship of integration uncovered that a golf course architect does have control over, and those are the amount of time it takes to play golf, the difficulty of the game, and the high costs associated with the sport.

Factors That Contribute to Participation Limitations

It is possible to decrease the amount of time it takes to play golf by increasing the pace of play on the course. To increase the pace of play you must address the course maintenance and setup practices, and initial course design features such as playing length, height and location of rough, and severity and location of hazards. The factors that affect the difficulty of a golf course include length of golf course, fairway width, rough height, and location and severity of hazards. Initial construction and subsequent maintenance cost are the main factors that contribute to the high costs of golfing. The factors that affect construction and maintenance costs are earth moving, slopes, frequency of hazards, maintenance standards, walkability, and types of grasses.
Chapter Three – Key Informant Interviews

Introduction

Eight key informants, all of whom are golf course superintendents, were interviewed to provide different perspectives on what makes their respective golf course appeal to golfers and maintain their prosperity. The informants were chosen not based on their personal or professional merit, but rather based on the merit and reputation of the golf course that employs them. Four Scottish and four Canadian courses were selected based on their unique historic, cultural, and economic features that have contributed to their sustainability, longevity, and success. All four Scottish interviews were conducted face-to-face at the key informant’s place of work and transcribed by hand during the interview. All superintendents were asked the same five questions that formed the base of the interview. The only reasons for additional questioning by the interviewer was for clarification, or repeated responses in order to ensure exact transcription. The Canadian key informant interviews were conducted via email.

To understand and interpret the data collected through key informant interviews, content method of analysis was used in the discussion section. A general understanding of the interview was attained though ad hoc techniques of analysis such as noting themes, seeing plausibility, making comparisons and contrasts, making metaphors and clustering (Deming & Swaffield, 2011). The following is a description of the golf course and superintendent interviewed, reasoning for the selection of each course, and transcription of the responses given in the in-depth interviews.
Scottish Key Informants

Old Course
St. Andrews, Scotland
Architect: Nature
Superintendent: Gordon McKie

The earliest documented partaking of golf took place on the Links of St Andrews, renowned throughout the world as the Home of Golf. The Old Course is an inaugural part of the history, culture and tradition of the game of golf. Unlike many other historical precedents, it was not built, but rather adapted from the existing Scottish landscape. All modern golf course design philosophies and principles were extracted from the layout of the Old Course.

The Old Course was selected not only due to its world class ranking, but also because of its deep-rooted historical and cultural contribution to the sport. Furthermore, the Old Course offers a unique social dynamic wherein they immensely value the opinion, wants, and needs, of the surrounding community. The golf course is located on publicly owned land, and as such belongs to each member of the community. The Old Course shuts down every Sunday and the links are transformed into a park where the community gathers. Strong community involvement and mutual investment in the land are unique components of the Old Course that further contributed to why it was chosen as a study subject. The following is a word-for-word transcription of the responses made by Gordon McKie, 12-year resident superintendent and community member of St. Andrews:

1. What elements of the golf course have changed, and what has stayed the same?
The philosophy of how we manage compared to how it was done many years ago has in principal stayed the same and only more modern ways of doing things are now at our disposal. The course has really stayed the same throughout with only the small tweaks having been implemented over the years. Most of the changes have been to allow for better management and accessibility. The game is forever evolving and sometimes we have to adapt the older courses to suit the challenges we face in the modern day game without affecting the history too much.
2. What do players value most, and what keeps them coming back?
Players value the historical significance the Old Course. They enjoy being part of natural beauty and experiencing God’s hand in the layout. It is unique to play golf on a completely indigenous course that was designed by wind, sheep and hundreds of years of natural evolution. Those who play the old course understand the rarity of that, and do not take it for granted.

3. How important is it that the course not only fit the landscape, but also fit the population?
If a golf course sits within the heart of a city, as The Old Course does, it is extremely crucial. There needs to be a two-way partnership with the community and the golf course or else it will not last. Working with the community rather than in spite, or around the community will open many doors to the sustainability and prosperity of the golf course.

4. Does your course adapt to the changes in the golf industry?
In terms of addressing the financial hardships the golf industry is experiencing, we are lucky because St. Andrews is better equipped than most to handle economic downturn. Due to the historical significance and the overall stature of the Old Course, golf enthusiasts will always play here.

In terms of adapting to the modernization of better equipment and better players, that is not our primary concern. We are first and foremost stewards of the land, and it is our job to safeguard history. As environmental custodians, we are here to sustain the golf course and ensure that it is still around in another 400 years. That being said, if we can manage to better defend the golf course, while remaining true to our primary duty of safeguarding and maintaining the Old Course in it’s original form, we will do so.

It is also our concern that people are living longer and more elderly people are playing golf with newly replaced hips and knees than ever before. We try to maintain the course in a way that will accommodate this growing population of golfers. For example, lowering bunker entrances to allow for easier accessibility (for both ball and player). It is a constant battle between maintaining the historic design elements of the course, and improving health, safety, maintenance, and modernization issues. A fine line that we walk.

We are constantly restoring elements of the golf course back to their original form. When you host 70,000 rounds per year you have a lot of ground traffic that eventually changes the topography over time. Areas are flattened and sand is gathered. It is our job to restore these features and reinstate the golfer’s decision-making process.

5. What are the demographics of the golfers that play here?
Worldwide demographics. Mostly men, but have noticed an increase in women lately. Husband/wife vacations. 75-85% of rounds played are non-local.
Trump International Golf Links
Aberdeenshire, Scotland
Architect: Martin Hawtree
Superintendent: John Bambury

Trump International Golf Links is the newest and most controversial golf course built in Scotland’s recent history. The political and environmental controversy arose out of the extremely sensitive plot of land that Mr. Trump acquired to build on. An untouched nature reserve that protects hundred feet high active sand dunes and lines the North Sea also makes for a fantastic golf course layout. Opened in the summer of 2012, Trump International has proved to the skeptics that a golf course can exist among sensitive land with nominal environmental impact and without destroying or defragmenting its ecological components.

Trump International was chosen as part of this research due to it’s rare immediate entry into GOLF Magazine’s Top 100 Courses in the World (50th), it’s environmental stewardship, as well as it’s ability to create controversy among traditionalist and innovators alike. Trump International was designed by Martin Hawtree, a leader in environmental and sustainable design. The Hawtree family has a repertoire of over 750 golf projects and a history in golf course design that dates back 100 years over three generations. The following is a word-for-word transcription of the responses made by Links Superintendent John Bambury:

1. What elements of the golf course have changed, and what has stayed the same?
Although Trump has only been open for one and a half years, we’re constantly reviewing feedback and assessing how we can improve. From small things like cart path accessibility, all the way to entire bunker removal and renovation. The course is on a challenging piece of land due to it’s constant change in form as the dunes are mobile and adapt to the movement of the sea. We try to emulate that on our side as well, adapting to the movement of the play. We’re not conforming, simply bettering our chances at success.

2. What do players value most, and what keeps them coming back?
Trump is an internationally recognized brand that is synonymous with high quality products and services, and trying to marry links golf into the Trump brand is our identifying feature. People
are initially drawn to our golf course simply because of the respect its name carries. Trump is well marketed and extremely well branded, which gives us a huge advantage over other golf courses.

If we’re talking about the golf course itself, I think the players value the serenity that the links provides them. When they come here to play, they experience unexpected tranquility and solidarity provided to them by the enormity of the native sand dunes. What keeps players coming back are the unique and distinctive land features that are only found in this part of the world. Sure there is the combination of wind, sea, and dunes at other locations, but not on the level of enormity and severity that you’ll find here. You cannot re-create this golf course ever, anywhere. It’s truly one of a kind, and that’s why they come back.

3. How important is it that the course not only fit the landscape, but also fit the population?
In the beginning we had a difficult time convincing the community that we were here as a partner, not a competitor. We knew that without the community’s acceptance, it would be very difficult to reach the level of recognition that we aimed for. Even though we knew we had a great golf course, the local support we needed was not there. We took strategic measures to convince the locals that we could benefit each other, and luckily we were successful in that. Otherwise we’d have a problem.

What strategic measures are you referring to?
We decided to be an entirely public golf course. This obsession with exclusivity and private golf clubs is an American ideal. We wanted the locals to feel as much, if not more, entitled to play the course then Donald Trump himself.

4. Does your course adapt to the changes in the golf industry?
We try to adapt and improve the basics, without conforming to current trends. We’ve reassessed movement, monitored traffic, and dealt with timing issues. But beyond these logistical challenges we are very confident in Martin Hawtree’s design, and believe that it will stand the test of time and challenge even the best players in the world.

5. What are the demographics of the golfers that play here?
I’d say we get about 50% local and 50% foreign play. There’s been a noticeable increase in Chinese.
Dornoch Links was a nine-hole course up until 1886. The original nine holes came into being in a similar fashion to the Old Course at St. Andrews: an Ice Age glacier carved the surface of the land, deposited vast areas of sand dunes which, over time, were stabilized by the growth of gorse, heather and a variety of sea grasses (Howard, 2010). In 1877, the citizens of the Royal Burgh of Dornoch met together and formed the Dornoch Golf Club. Dr. Hugh Gunn, one of the men responsible for the foundation of the club, was educated in St. Andrews, where he also learned the game of golf. In 1883, the legendary Old Tom Morris of St. Andrews, was commissioned to design the first formal nine holes. Dornoch became a full 18-hole golf course in 1886 when a subsequent nine holes were added.

Royal Dornoch consistently holds the 13th or 14th spot on GOLF Magazines Top 100 Courses in the World. However, due to Dornoch’s remote northerly location, far from the main centers of population, it has never been host to the prestigious major British Open Championship.

Royal Dornoch was chosen as an informant due to its high world ranking, as well as its dedication to promoting accessibility and participation among all members of the surrounding community. Royal Dornoch has a long history of fostering the game, demonstrated by the creation of a Ladies Course, offering free green-fees to all children of the local parish, as well as discounted rates and memberships to the locals. The following is a word-for-word transcription of the responses made by Royal Dornoch Superintendent Neil Hampton:
1. **What elements of the golf course have changed, and what has stayed the same?**  
Nothing! The original 9-hole design that was established in 1883 remains entirely unchanged. And that is the beauty of Royal Dornoch.

2. **What do players value most, and what keeps them coming back?**  
Royal Dornoch is a true links style golf course, and as true a test as it was 400 years ago as it is today. It is a challenge, and players keep coming back to test not only their shot making skill, but their strategic decision making process as well. Although Royal Dornoch is not long by any means, the rare and cleverly strategic design makes length immaterial.

3. **How important is it that the course not only fit the landscape, but also fit the population?**  
Extremely. Dornoch has a small population. And what that means is the ground swell of opinion is so big that you need everyone’s support. For a community with a large population you can still be successful with only a fraction of the community’s support. In our decision-making process we think of the effects our choices will have on the community. It is a two way street, an open relationship. We have their best interest in mind, and likewise they do the same for us. Golf is the main attraction for people to visit Dornoch. Without it, local business would suffer greatly, so that mutual reliance promotes respect, support, and security.

4. **Does your course adapt to the changes in the golf industry?**  
Royal Dornoch is virtually unchanged since the 18th century. Our principal role is to maintain and sustain the original design of the golf course, not alter it. Although modernized equipment is allowing players to hit the ball ridiculously far, we do not feel the need to alter the golf course because it is defended well enough in other ways than length.

   **What defenses are you referring to?**  
   Well the wind, of course. Contouring of fairways and more importantly contouring of greens. And strategic bunker placement. These elements create a very challenging game that requires you to think, and use your imagination, and know when to yield. Blasting it 300 yards off the tee is no use to you here.

5. **What are the demographics of the golfers that play here?**  
We have 1,200 members, 1,000 of those are male, and 110 of those are juniors. We host approximately 21,800 rounds per season, and 11,000 of those are visitors. The membership dues are quite reasonable, 430 pounds, (peak season green fee is 120 pounds) which really encourages locals to become a part of the club. And visitors as well I might add, if you’re playing more than four rounds of golf at Dornoch, why wouldn’t you?
North Berwick
North Berwick, Scotland
Architect: Ben Sayers
Golf Tourism Officer: Allan Minto

Founded in 1832, North Berwick is the 13th oldest golf club in the world. The West Links was originally 6 holes due to property constraints, with a 7th added before it was extended to 18 holes in 1877 with the acquisition of a western property extension. Further minor alterations to length and layout giving the course its present shape were carried out in 1932 under the supervision of Ben Sayers.

In 1888 North Berwick formed a ladies only golf course, which is still in tact today in the form of a children’s only 9-hole course. Adults must be accompanied by a child 14 years or under to have access to the Children’s Course. The promotion and fostering of the game to young children is one of the reasons North Berwick stood out as a valuable contributor to the research. Furthermore, this golf club conveys a valuable ideal that golf should not take all day. North Berwick is renowned for getting people in and out in the shortest period of time possible, going as far as to hang a sign in the proshop saying that “a round of golf should not take more than 3 hours”. By examining their methods that allow for quick play, this thesis will benefit from studying the history, culture and social values possessed.

North Berwick is ranked 68th on GOLF Magazine’s Top 100 Courses in the World, another extremely well respected, and historically significant golf course. However due to the area’s limited space and logistical restraints, North Berwick will never host the British Open. The superintendent at North Berwick was unavailable to participate as a key informant, and Allan Minto was recommended in his place. Allan is the Golf Tourism Officer for North Berwick, and as such it is his job to know the course history and layout better than anyone else
in order to promote, foster and sustain their links. As North Berwick’s biggest advocate, he understands what attracts golfers as well as what keeps them coming back. The following is a word-for-word transcription of the responses given by Allan Minto:

1. **What elements of the golf course have changed, and what has stayed the same?**
   1895 saw Berwick with a championship level golf course of 18 holes totaling 6095 yards. Slight routing alterations that took place in 1932 give the course it’s present day form. Since then, apart from the recent installation of an automatic irrigation system, there have been no significant changes.

2. **What do players value most, and what keeps them coming back?**
   This golf course is just a lot of fun to play, and you don’t tire of it. There are unique elements and forms on the course that intrigue the traditional golfer, yet appeal to the more outgoing player as well. The club has really embraced features like the stonewall that runs through the property and along side greens. It adds to the enjoyment of the round, and that is not only what attracts them here in the first place, but also what keeps them coming back.

   Beyond the physical elements of the golf course, North Berwick is know for it’s inclusion of all types of golfers, everyone is welcome, including children. It has a friendly and inviting atmosphere. A huge attractor is the children’s course, for those 14 and under. This allows for the whole family to come to the golf course and engage in a healthy, fun activity together. I think the attitude that the club has regarding pace of play is also a large attractor. Golfers get in and out in a short period of time and are able to get on with their day.

   **How do they manage to increase the pace of play?**
   You’ll notice when we go out onto the course that there is very little rough and fescue. This allows for golfers to quickly and easily find their balls, they spend virtually no time looking for lost balls. There are not that many bunkers either. Less time raking bunkers and more time getting on with it. It helps that North Berwick is only 6400 yards at its longest. It is expected that you play your round within three hours, anything longer is not tolerated.

   **If you take away all of these elements does it make the course less of a challenge to higher skilled golfers?**
   Not in the slightest. Have you seen our greens?! You might be 20 yards from the putting surface on your drive, but a four putt is never out of the question. The greens have severe contours, layers and tiers that prove to be very challenging. It becomes more of a strategic game. Maybe being 100 yards away from the green (as opposed to 20 yards) gives you a better approach. Take number 13 for example. There is a 3 foot high stonewall that runs the entire length of the green that is only a few yards from the collar. Tell me that’s not a challenge!

3. **How important is it that the course not only fit the landscape, but also fit the**
population?
The town values the golf course due to the revenue it brings, and the course values the town for the same reason. We got through the recession without feeling a hit by working together. Without this partnership both the local businesses and the golf course would not find sustainability.

4. Does your course adapt to the changes in the golf industry?
We cannot expand or lengthen the yardage due to property boundary limitations. Due to logistical downfalls including size, accommodation, and transportation, North Berwick will never host the British Open. Therefore we do not feel the pressure to conform to a more difficult style of play.

5. What are the demographics of the golfers that play here?
More juniors than average of course; the children’s course is a very successful program. We really see it as our job to foster the game of golf, and introduce the next generation to the game. They are the key to golf’s sustainability. Cattriona Matthew grew up just there (a modest stone house bordering the 1st fairway). She learned to play golf on the children’s course, and now is the only Scottish woman to ever win a major championship on the LPGA tour.
Canadian Key Informants

Banff Springs Golf Course
Banff, Alberta
Architect: Bill Thompson, Donald Ross, Stanley Thompson
Superintendent: Robert Burrows

Golf began in Banff Springs in 1911 with a 9-hole course originally designed by Bill Thompson. In 1919 the Canadian Pacific Railroad commissioned Donald Ross to expand and improve on the existing layout to better coincide with the grandeur of the Banff Springs Hotel. Further desire to contend with the Canadian National Railroad’s highly praised Jasper Park Golf Course, the CPR hired Stanley Thompson to build them a championship course in 1926. Due to the partnership with CPR, Thompson was able to cart in abundant amounts of topsoil to remedy the otherwise gravelly river bottom property. Further employing horses, mules, railcars, and many men to remove rocks, shape the earth, and lay the soil, Thompson’s design at Banff Springs is listed as one of his best (Golf Canada, 2012). Costing over a million dollars, the newly built Banff Springs was the most expensive golf course ever developed at that time. Apart from the addition of 9-holes and slight hole sequencing alterations to better incorporate the new clubhouse in 1989, Thompson’s original design is largely intact today.

Every two years SCOREGolf releases their Top 100 Canadian Golf Course rankings, and in 2012 Banff Springs placed seventh. Banff Springs was chosen as a key informant not only due to its high national ranking, but also because of its long history, and iconic place in Canadian golf course culture. The following is a transcription of the responses given by superintendent Robert Burrows:

1. What elements of the golf course have changed, and what has stayed the same?
Not a lot since Thompson’s input in 1926 because it was such a good design. He was such a visionary. He designed a bold and complicated bunker system. He was aware that the 16,000ft elevation would make the ball travel 10% further. He designed a golf course that was 6900 yards, virtually unheard of in 1926.

9-holes were added in 1988. And a new clubhouse was built so the routing was altered to incorporate it better. The holes stayed the same; it was only the sequence that changed. There was also a five million dollar renovation in 1998 to re-sod the fairways, square the tees, rebuild the greens and lengthen it. These things have a lifespan. Everything that was done had to be kept sympathetic with Thompson.

2. What do players value most, and what keeps them coming back?
The WOW factor. People take 200 pictures throughout their round. The mountains are so close to the golf course and eight holes run along the Bow River. There’s even a note on the scorecard of how to proceed if your ball hits an elk. You would never get a permit today to build a golf course in a National Park, and that makes it special. It’s also such an iconic golf course. We’re 102 years old and are part of the Canadian Pacific Railway heritage. We put ourselves right up there among other resort hotels like Pebble Beach and Pinehurst. It’s also the experiential factor. From the moment you drive onto the property it’s all about the whole experience. Our slogan is “turning moments into memories”. Every customer has an electronic profile so we know what kind of pillows they want, and if they prefer graphite or steel shafts. It’s value added with the little things.

What keeps people coming back is the architecture. It’s friendly and doesn’t beat you up. There’s no side hill lies or tricky landings, you can see what’s ahead of you. But there’s such a strong strategic element to it that it will keep challenging you. If you have design, appeal, and uniqueness you will have success.

3. How important is it that the course not only fit the landscape, but also fit the population?
The relationship with the community has to be symbiotic. The local community is an extremely important part of our clientele.
Is it important that it fits; yes. I think the days of forcing it and trucking in dirt and building steep bunker faces that require a lot of maintenance are gone. Now it’s all about zero impact on the land, and reducing inputs. Capturing, storing, and re-using water. This is the time of sustainable design.

4. Does your course adapt to the changes in the golf industry?
We are stewards of this old lady, foremost purists and traditionalists. But it’s also a business environment and we need to balance that. We’re not under pressure, we’re sort of an anomaly that way. Because we’re such an iconic destination we didn’t lower the rates during the recession. In fact my budget has gone up.
We don’t cater to a particular level of player. We’re not going to lengthen to host a CPGA (Canadian Professional Golf Association) event. We would never allow 50,000 spectators on the property at once. This is nationally protected land and there would be too great an impact on wildlife and the environment with all of the grandstands and logistics that an event of that
magnitude requires. Also it is very difficult to get permits through Park Canada to remove trees, let alone expand into the park. But we have adapted in other ways. We’ve learned a lot from the ski industry on how to stay relevant. There’s a changing demographic in leisure activities in which sports like skiing and bowling have picked up on. Skiing has created all of these kids camps and bunny hills where parents can drop their kids off. They address the time factor because you can come and go as you want. And the bunny hills are easy and encourage kids to smile and enjoy themselves. Learning isn’t frustrating and they always want to come back and tell their friends about it. And it’s cheap too. And we’ve tried to adopt those ideals as well. It’s a three-legged stool where location, wow factor, and price are involved. If you rely on just one, or even two, you will fail.
Toronto Golf Club
Mississaugua, Ontario
Architect: Harry Colt, Howard Watson, Martin Hawtree
Superintendent: Al Schwemler

When the Toronto Golf Club originated in 1876 there were no golf courses in the United States, and only two in Canada. In 1909 a decision was made to re-locate the club outside the expanding City of Toronto limits, and a site along the banks of the Etobicoke River was selected. English architect Harry Colt was brought over from England to design the new course, which was ready for play in 1912. In 2009 fellow British architect Martin Hawtree restored the original Colt design. This extensive restoration involved modifying the bunkering style, green expansions, tee box alterations, and grass lines transformation.

In 2012 Toronto Golf Club ranked 18th on SCOREGolf’s Top 100 Canadian Golf Courses. The Toronto Golf Club was chosen as a key informant not only due to its high national ranking, but also because of its rich heritage, cultural significance, defining traditions, and importance among Canadian golf course history. The following is a transcription of the responses given by superintendent Al Schwemler:

1. What elements of the golf course have changed, and what has stayed the same?
   • Major change was the move from the original site in Toronto (the area currently bounded by Woodbine Ave on the east, Coxwell Ave on the west, Kingston Road to the south, and the railway tracks to the north) to the current site in Mississaugua along the banks of the Etobicoke Creek.
   • Harry Colt designed the current property and construction began in 1911. The new course was open for play in 1912.

Changes to the Current Property:
   • Green Rebuilds/Relocations
      a) Colt and Alison: 6 and 13
      b) Howard Watson: 2, 3, 8, and 16
      c) Hawtree: 11, 15
   • Routing Changes
a) Colt and Alison: 6,7,14
b) Howard Watson: 5

- Green Expansions – Hawtree: 1,2,6,7,8,10,13,14,16,17,18
- Bunkering – have been changed/added/removed from the original design throughout the history of the Club. Shapes, style etc. have been altered.
- Tee boxes – have been changed throughout the history of the Club, mainly to add length, and additional angles of play
- Tree Plantings and removals – significant plantings in the 1960s and removals 1990s-current
- Grass line changes – addition of accent fescues, fairway expansions/reductions, addition of short cut green surrounds, changes to roughs
- Re-routing of creeks
- Green surrounds have undergone changes over time
- Elimination and re-introduction of the lower 12th fairway

Significant changes were made during the Hawtree renovation in 2009 including:
- Bunkering style, size, shape, locations, and addition of new bunkers
- Green expansions – some new, others to capture original green shapes
- Tee boxes – additional yardage, forward tees, alternative angles of play
- Grass lines – fairways, roughs
- Routing stayed the same as pre-renovation

2. What do players value most, and what keeps them coming back?
- From a design standpoint – The overall visual look of the golf course: i.e. no holes look the same, topography, ruggedness, fescues, bunkering style, vistas, course conditioning, natural beauty, classic design style unique to area private clubs.
- From a playability standpoint – Strategy of the design: i.e. firm and fast, hazards, green sites, options, variety of length, challenge, test of golf, requires thought, includes the ground game.
- From a culture standpoint – Speed of play (typically under 4 hours) and access to the first tee (no tee times)

- The golf course
- Speed of play and access to the first tee
- Club traditions
- It is a GOLF CLUB, not a Country Club
- Camaraderie of the membership
- Practice facility
- 9 hole Watson course

3. How important is it that the course not only fit the landscape, but also fit the population?
It is very important to design courses that fit the landscape and the local population due to:
- Restraints on new or existing properties due to governing bodies (Conservation authorities etc.). Courses designed to fit the landscape appear to be more natural and
less artificial. Also, less earth moving helps reduce the cost of construction if it can conform to the natural landscape, making it a more economically sound investment.

- The demographics of the local population could determine the success of a golf course. If the local population consists of young families, the design should make it accessible and enjoyable for all age groups, in order for families to participate together. The design should address current time constraints on golfers (would it take 3 or 6 hours to play, based on difficulty) Design should facilitate challenges for all levels of golfers, yet still making it FUN for those just taking up the game.

- Average annual income of the local population could impact design. A $1.5 million vs a $20 million design/construct would drive the cost of a green fee, either making it affordable or not based on the income levels of the local neighbors. Who are you trying to attract?

When I was young, we had accessibility to fields/parks/large open areas where we would hit balls for hours and made up fun games (closest to the tree etc.). Many of the kids in the neighborhood would meet up and “whack” balls together (and it didn’t cost anything). I don’t think this is readily available these days.

4. **Does your course adapt to the changes in the golf industry?**

A large-scale renovation was performed in 2009 to achieve the following:

- Bring back/maintain/add to the spirit of Colt and the intensions of his original design. The course had evolved into a parkland style course and many Colt features were lost in the transformation
- Add length and forward tees to cater to all levels of player ability
- Address safety issues
- Improve agronomics (drainage, growing environments, increase teeing ground square footage)
- Introduce challenge and shot variety i.e. deeper bunkers, collection bunkers, short cut green surrounds, alternative tee boxes, allow the opportunity for the “ground game”
- Re-introduce lost features – bunkers, green shapes, lost pin locations, heathland character
- Introduce new turf types (more drought tolerant fescue roughs to reduce water inputs
- Replace an aging irrigation system
- To maintain new member appeal (men and women)
- The renovation was intended to maintain a “members golf club”, not to attract a PGA event

A renovation to our 9 hole Watson course and practice facility is being considered in the near future to address:

- Safety issues within the golf course and with surrounding neighborhoods
- The overall member experience at the club i.e. more members are practicing, only have time to play 9 holes, introduce juniors/spouses to the game
- Aging irrigation system
- Course playability and agronomic issues
- Inadequate practice facility
Mississaugua Golf and Country Club
Mississaugua, Ontario
Architect: Percy Barrett, George Cumming, Stanley Thompson
Superintendent: Adam Zubek

Percy Barrett laid out the original 9-holes of Mississaugua Golf and Country Club in 1906. Shortly after, George Cumming laid out the 18-hole course in 1909. Throughout the time period of 1919-1928 the golf course had undergone several changes to the layout. Stanley Thompson, a Canadian golf course architect and member of the Club, was instrumental in designing all of the major modifications that were instituted in 1928. These modifications most notably included the extension of the golf course over the Credit River, thus lengthening the course by 500 yards. This change was instrumental in the course being chosen as the 1931 site for the Canadian Open.

Today Mississaugua Golf and Country Club has hosted the Canadian Open on six occasions. The Club has also been host to the Canadian Senior Open, the Ontario Amateur Championship, and the Canadian Amateur Championship. In 2012 Mississaugua was ranked 29th on SCOREGolf’s Top 100 Canadian Golf Courses. Mississaugua Golf and Country Club was chosen as a key informant not only due to its high national ranking, but also because of its involvement with professional golf, and historic place among Canadian golf courses. The following is a transcription of the responses given by superintendent Adam Zubek:

1. **What elements of the golf course have changed, and what has stayed the same?**
   In 1906 we were a 9 hole course which further expanded to an 18 hole course. In 1928 Stanley Thompson expanded the course to cross the Credit River stretching the overall length to 6500 yards. This routing remains the same today.

2. **What do players value most, and what keeps them coming back?**
   Valley landscape and the presence of the Credit River. Location, club culture, a Classic Parkland course that is home to some of Canada’s greatest golf history.
3. **How important is it that the course not only fit the landscape, but also fit the population?**
   Critical! I would suggest that the identity of the course helps shape the identity of the club.

4. **Does your course adapt to the changes in the golf industry?**
   Vision Statement: The Course Long Range Plan for Mississaugua Golf & Country Club is designed to build upon the Club’s rich history and core values to ensure that it remains at the forefront of private golf in Canada. All course improvements will be designed to attract and appeal to golfers of all skill levels from beginner to elite golfers, while continuing to be relevant for championship play.
Cutten Fields
Guelph, Ontario
Architect: Chick Evans, Stanley Thompson
Superintendent: David Kuypers

On 230 acres of land acquired by Arthur Cutten in 1927, Chick Evans and Stanley Thompson were commissioned to design a golf course, which was completed in 1931. The course opened at 6,400 yards and a par 70 rating. It is reputed to have cost $750,000, a large sum in 1931 during the midst of a depression. Once completed Mr. Cutten intended to present the clubhouse and golf course to the City of Guelph, however due to anticipated maintenance costs and deficits that would be assumed by city taxpayers, was declined.

Between the late 1950s and early 1980s, through the eventual purchase of all shares, the University of Guelph became the sole shareholder of Cutten Fields. Cutten Fields was chosen as a key informant due to it’s partnership with the University of Guelph, importance to the city of Guelph, and long standing history among heritage golf course design. The following is a transcription of the responses given by superintendent David Kuypers:

1. **What elements of the golf course have changed, and what has stayed the same?**
The golf course was subdivided in the 50’s for what is now Dormie and Vardon Dr. The club needed to raise capital. Holes 15,16,13 have been altered through th years as a result. The initial change was unsuccessful so the current changes were done- 13 as a 3par, 15 to a 5par. There are 3 par3’s on the second 9.

2. **What do players value most, and what keeps them coming back?**
It offers a reasonable challenge to very talented players but is very playable (no forced carries, course can be played at a very short yardage) for high handicappers and begins. Also, it is a very walkable golf course. Hopefully, consistent high quality of service, food and conditions.

3. **How important is it that the course not only fit the landscape, but also fit the population?**
Very, our members could be classified as “avid” golfers as opposed to “very skilled”- they are passionate about the game, the golf course and the conditions but they have other responsibilities like work and family so overly difficult is not part of what they value.
4. Does your course adapt to the changes in the golf industry?
Renovations are focused on:
1. Sustainability/Efficiency- optimizing plant health through improved rowing conditions to be less reliant on chemical, fertilizer and water inputs.
2. Flexibility- golf course renos are focused on improved teeing areas at shorter distances to make the golf course more attractive to higher handicaps/women/juniors/beginners. Adding short grass areas in front of and around greens to make the approach easier for the above group and to add a different challenge for the skilled player.
Chapter Four – Discussion and Analysis

Introduction

The discussion and analysis section will elaborate on key ideas that were generated through the key informant interviews in order to better understand what makes theses Scottish and Canadian golf courses unique, sustainable, and successful. Once all eight interviews were analyzed, the four Scottish responses were then compared with the four Canadian responses to determine similarities and differences among the philosophies and practices of each golf market.

Scottish Discussion and Analysis

There was a consistency among interview responses regarding the lack of change these historical golf courses have undergone since their inauguration. It is significant to note that the Old Course, Royal Dornoch, and North Berwick, some of the oldest golf courses ever created, have experienced no significant changes. Each golf course made conscious decisions not to allow current trends or fashions influence a need to conform, which exemplifies a high quality of design and layout. Trump International has only been open for one and a half years, therefore their lack of change is less significant.

When asked what players value most about their golf course there was a range of answers. The Old Course cited its historical significance as a huge value to those who play there. John Bambury, superintendent at Trump International, cannot overstate the value of a brand. One that is recognizable and synonymous with high quality products and services has proved invaluable in initially attracting people to their course. Building trust with your client through a well marketed and extremely well branded name will set your course apart and give you an advantage over others. North Berwick stated that their inclusion of all types of golfers is
a large attraction for many people. They stress the value of welcoming children and women, and making sure that the atmosphere is friendly and inviting. They also site their pace-of-play policy as a draw, golfers can get in and out and on with their day quickly.

There was however an overlap in the responses, as every single reply used some variation of the word unique to describe an element of its golf course that attracts and keeps golfers. In the case of the Old Course, it is the fact that wind, sheep, and hundreds of years of natural evolution was the original designer. For Trump International it is their unique and distinctive land features that are only found in that part of the world and cannot be re-created. Royal Dornoch says their layout possesses a rare strategic challenge, which is not only an initial attraction, but also something that keeps players coming back. Finally North Berwick cites their unique physical forms found on the golf course as the biggest draw for both traditional and more outgoing golfers alike. They have embraced unconventional features such as the stonewall that throughout the property, and these elements create a fun atmosphere that adds to the enjoyments of the round. Overall, all four informants place a high value on differentiating features. Whether it is physical forms or historical appeal, they attribute part of their participation success to differentiating themselves and being unique.

The high value that each course places on community was very apparent in all interviews. Having an open and working relationship with the surrounding community is a key factor in contributing to a golf course’s sustainability. Trump International was adamant in remaining a public golf course. Making their course accessible to the public was a way of creating a partnership and support system with the local community. Gordon McKie, superintendent of the St. Andrews Links, believes that without a two-way partnership with the community, a golf course will not last. Depending on the proximity and size of the surrounding
population, there is increased importance placed on a course fitting its community. If a golf course is located in close proximity to the community, as with the Old Course and North Berwick, it is very important to establish a relationship with each other. If the population is small, as with Royal Dornoch, it is extremely important to have the support of the entire community due to the large ground swell of opinion. A golf course with a large community can still be successful with only a fraction of the populations support due to increased numbers. Apparent by the similar response of each informant, having a mutual reliance on the community will promote respect, support, and security, which better enable a golf course to have sustainable success.

In terms of determining the best philosophy of adapting to the changes within the golf industry, there were similarities, as well as differences in opinion among the informants. The most recent and significant change within the golf industry is the modernization of equipment, which has allowed golfers to hit the ball farther. Therefore it has become important to many golf courses to ensure they are defended adequately. This idea of defending a golf course is what was referred to in terms of adapting to the changes of the golf industry.

Allan Minto of North Berwick attributed the lack of pressure they feel to conform to a more difficult style of play to the fact that they will never host a British Open Championship. The capacity to be unaffected by the modernization of better equipment and better players of North Berwick is extremely different from that of the Old Course. Although they are foremost stewards of the land, the managers and superintendents at the Old Course are constantly trying to balance the historic design elements of the course with modernization. The main reason the decision makers feel pressure to modernize is due to the fact they the Old Course will host many British Open Championships in the future, and they do not want to leave the course unprotected.
Gordon McKie further elaborates that if they can simultaneously better defend the golf course and remain true to their primary duty of safeguarding it’s original form, they will do so.

Royal Dornoch has a different belief when it comes to better defending their golf course. It must be noted that this golf course, although rated 14th on GOLF Magazine’s Top 100 Courses in the World, will never host a British Open due to it’s remote location and logistical shortcomings. Superintendent Neil Hampton says that they are not the least bit concerned with players hitting the ball farther than ever before. Although the golf course is not protected through increased distance, it has alternative means of effectively defending itself. He goes on to discuss the power of strategic design, a firm believer that there is more to the game than overcoming distance. He believes there are more interesting, appealing, and successful ways to defend a golf course. And Dornoch is a perfect example of how contouring, strategic hazard placement, and wind can effectively do so. An advantage is given to players who can identify risk/reward scenarios, use their imagination, and yield to effective strategic design temptations, not those who boast a 300-yard drive off the tee.

Scottish Conclusion

All four key informants attributed the success of the golf course to being able to differentiate themselves through unique, rare, or distinctive features. Whether it is the rare and distinct landforms found at Trump International or the incomparable culture and historical tradition imbedded in the Old Course, finding uniqueness is essential. Differentiating yourself from other golf courses will positively contribute to the sustainability and success of attracting participants.
Furthermore, common among all superintendents was the reliance on fun, enjoyment, challenge, and variation between rounds of golf to keep people interested. To be able to play the same golf course over and over while having a different experience each time will intrigue golfers, enticing them to come back for more. And the most successful way to provide variety and intrigue is through strategic design.

**Canadian Discussion and Analysis**

There is a consistency among interview responses regarding the amount of change these golf courses have undergone since their inauguration. Although all four Canadian key informants are considered historically significant heritage golf courses in Canada, most have undergone significant routing and layout changes during their lifetime. Mississaugua has experienced the least amount of change among the respondents, remaining unchanged since the addition of 9-holes in 1928. Although Cutten Fields, Toronto Golf Club and Banff Springs have increased the overall yardage of their golf course at some point during their lifetime, they are not considered long golf courses, maxing out at 6559, 6836, and 6938 yards respectively.

It is significant to note that although the initial renovations at both Banff Springs and Toronto Golf Club moved away from the original design, their more recent alterations were an attempt to restore the golf course back to its original design intent. As stated by Banff Spring’s superintendent, everything that was done had to be kept sympathetic with the original designer’s vision. The recent renovations at Toronto Golf Club were undertaken by architect Martin Hawtree to reinstatate design features that had been lost over time. The purpose of the renovations was to bring back the spirit of Colt and reinstate the original design intentions. Mississaugua however never strayed from the Stanley Thompson design created in 1928.
There were a wide variety of responses in terms of what attracts and retains golfers to these courses. Isolated responses include food service, access to the tee, speed of play, walkable layout, practice facilities, club culture, and camaraderie of the membership. However there was consistency among the responses from Banff, Toronto, and Mississaugua, whom all listed the high visual appeal of the property as an attractor. Three respondents also listed the historical significance of the golf course as a contributing factor to attracting and retaining golfers.

Comparatively, there was overlapping value placed on the importance of a strategically designed golf course. Banff Springs cites that the architecture is friendly and doesn’t beat you up, yet contains a strong strategic element that it is able to simultaneously challenge higher skilled golfers. Although Banff has limited side-hill lies and tricky landings, it is still able to provide a challenging layout to higher skilled golfers by the use of strategic design. Cutten Fields offers a reasonable challenge to very talented players but is very playable (no forced carries, course can be played at a very short yardage) for high handicappers. From a playability standpoint, Toronto Golf Club attributes the strategy of design as an important appealing factor. It appeals to the higher handicapped golfers by offering options and variety of length, yet also provides strategic variation that creates a challenging test for better players. Al Schwemler of Toronto Golf Club says that design should facilitate challenges for all levels of golfers, yet still make it fun for those just taking up the game. The ability of a golf course to appeal to a wide variety of golfers through strategic design is extremely important in initially attracting and subsequently retaining golfers.

There was a consistently high value placed on the relationship between golf course and community among the key informants. A symbiotic relationship is critical in determining the golf course’s success. There was also an extremely high importance placed on how naturally the
golf course fits the existing land. Banff cited that the days of forcing design, trucking dirt, and installing features that require a lot of maintenance are gone. Now is the time of sustainable design, which includes zero impact, capturing and re-using water and reducing inputs. Toronto Golf Club also encourages this ideal saying that less earth moving will also reduce the cost of construction and make for a more economically sound investment. During the reconstruction of 2009, Toronto introduced new drought tolerant turf types to reduce water inputs.

Although three of the Canadian key informants have undergone significant renovations, they do not do so in an attempt to conform to the changing trends in the golf industry, but rather to address the features on a golf course that have a natural lifespan. These renovations are undergone to address safety, playability, variety, inclusion, and restoration. In regards to conforming to the changing golf industry, Banff, Cutten, and Toronto stated that renovations are not undergone to cater to a specific level of player, but rather to increase the appeal to a wider variety of player. Although Toronto Golf Club added length to the golf course during the 2009 renovations, they also added forward tees to increase the appeal to all varieties of skill levels. Robert Burrows of Banff is a traditionalist and purist, and foremost a steward of the land. Banff does not feel pressure to conform to the industry due to its established reputation as an iconic heritage destination. Due to various limitations, Banff, Toronto, nor Cutten will ever host a Canadian Professional Golf Association event, which further relieves the pressure to lengthen or conform.

**Canadian Conclusion**

Although all Canadian informants have undergone significant changes to the golf course throughout their lifetime, there is a high value placed upon reviving, sustaining, and maintaining
the design intent of the original architect. In the cases of Banff and Toronto where the heritage design features have been lost over time, there has been a concerted effort to restore design intent.

There was an overlap in the responses from the key informants on the importance of a golf course fitting the existing land. Designers must be aware of how to create more sustainable designs that have lower impacts and reduced inputs. By moving less earth, introducing drought tolerant turf, and capturing and re-using water, will reduce the cost of construction and maintenance and make for a more economically sound investment.

All of the informants placed high importance on designs that appeal to all level of golfers. In regards to conforming to the changing golf industry, Banff, Mississauga, and Toronto stated that renovations are not undergone to cater to a specific level of player, but rather to increase the appeal to a wider variety of player. The ability of a golf course to appeal to a wide variety of golfers through strategic design is extremely important in initially attracting and subsequently retaining golfers. The Canadian key informants are able to facilitate a design that appeals to a wide variety of skill level through strategic design.

Comparative Analysis

The following is a comparative analysis between the responses given by the Scottish key informants and those given by the Canadian key informants:

There is a stark difference between the frequency and extent of changes undergone by Scottish golf courses and Canadian golf courses. The Scottish golf courses have thrived for hundreds of years with no significant changes, making conscious decisions not to allow current trends or fashions influence a need to conform. In contrast, the Canadian courses have
experienced a cycle of changes, initially moving away from the original design intent and then eventually reinstating design features that had been lost or altered over time.

When asked what attracts and retains players to their golf course there was a range of answers that did not transfer between international informants. Food service, access to the tee, practice facilities, and club culture were attractions listed only by Canadian key informants. There were however overlaps in responses between Scottish and Canadian superintendents that include the value of quick pace of play, inclusion of all types of golfer, and a walkable golf course. Every key informant listed the importance of having a distinct or unique feature incorporated into the golf course. In the cases of Trump International, Banff Springs, Toronto Golf Club, and Mississaugua Golf and Country Club, the unique feature was a distinct landform, all of which were preexisting natural features on the property that were incorporated into the design. The Old Course, Banff, Toronto, and Mississaugua all listed the historical significance of the golf course as a contributing factor to attracting and retaining golfers.

The high value that each course places on community was very apparent in all eight interviews. Having an open and working relationship with the surrounding community is a key factor in contributing to a golf course’s longevity. The importance of a golf course fitting the existing land was of high importance among both Scottish and Canadian golf courses. Doing so will reduce the cost of construction and maintenance and make for a more economically sound investment.

In terms of adapting to the changes within the golf industry the differences were not based on country of origin, but rather if they will ever host a professional golf event or not. The courses that have an opportunity to host a major national championship (Old Course, Trump International, Mississaugua Golf and Country Club) experience more pressure and place a
higher concern on defending the golf course. The Old Course and Mississauga highlight the difficulty of balancing the pressure to conform and modernize, and balancing being a protector and steward of the historic design elements.

The greatest similarity among Scottish and Canadian key informants was the importance of strategic design. This design philosophy allows for a fun and exciting round of golf that offers variation and options that players do not tire of. It also provides different shot values that appeal to higher handicappers as well higher skilled golfers. The ability of a golf course to appeal to a wide variety of golfers through strategic design was repeatedly listed as an important factor in initially attracting and subsequently retaining golfers. The following is a summary of the differences and similarities between the Scottish and Canadian key informant interview responses:

Differences:

- Frequency and extent of changes throughout the lifetime of the course
- Value of food service, access to the tee, practice facilities, and club culture by Canadian key informants only
- Pressure to lengthen conform based on the possibility of hosting a professional event

Similarities:

- Value of quick pace of play
- Inclusion of all types of golfers
- Walkable golf course
- The importance of having a distinct or unique features (landforms or historical significance)
- The high value that placed on community/course relationship
- Designing a golf course that fits the existing land to reduce input, and lower construction and maintenance costs
- Maintaining a moderate playing length, defending the course in other ways
- Strategic design to ensure enjoyable and fun round that players do not tire of
- Strategic design to defend golf course
- Strategic design to appeal to wide variety of skill level
Chapter Five – Development of Design Solutions

Introduction

The information in this chapter will integrate the material gathered in the scholarship of integration with that gathered in the key informant interviews to produce design solutions that will directly address the participation limitations that were identified in Chapter Four including the amount of time required to play, and level of difficulty, and high costs associated with the sport.

Design Solutions That Address the Amount of Time Required to Play

Recap: The amount time it takes to play golf was listed as a participation constraint in all three of the globe’s largest golf markets. Golfers and non-golfers alike have attributed their decreased interest in the game to the amount of time required to play a round of golf (Hueber, 2012). In the USGA’s Pace of Play Initiative, they acknowledge that slow play is incompatible with today’s modern society in which personal time for recreation is compressed (United States Golf Association, 2103).

Increase the Pace of Play

Increasing the pace of play on the course can decrease the amount of time it takes to play a round of golf. There are many factors that influence this time period, some of which are beyond the influence of golf course architects such as management policies and player ability. For the purpose of this section, only the controllable factors will be addressed. A few design features that were said to increase the pace of play in the integrative literature review (such as distance of travel between green and tee, and the total par) were not addressed in any of the key informant
interviews. There are however three main factors that were discussed during the interviews that have shown to have great influence over the time it takes to play a round of golf. They are as follows:

1. Playing length
2. Severity and location of hazards
3. Height and location of rough, and amount of fairway

1. Playing Length

Very simply, the longer the golf course the more time it will take to complete. The Old Course, today’s most iconic and historical significant golf course is 6721 yards at it’s longest. Royal Dornoch, the 14th best golf course in the world is 6711 yards at it’s longest. North Berwick, ranked 68th in the world, maxes out at 6400 yards. Furthermore Banff Springs (ranked 7th in the nation) and Toronto Golf Club (ranked 18th in the nation) max out at 6938, and 6559 yards respectively. All five of the superintendents at these golf courses state that length is less important when it comes to the quality and difficulty of a golf course. It is not the primary concern of such golf courses to increase the length to better defend or conform to the modernization of the golf industry. There are much more effective ways to do so, as suggested by Neil Hampton of Royal Dornoch, through wind, contouring of fairways, contouring of greens, and strategic bunker placement. Cleverly strategic design makes length immaterial.

Therefore if a shorter course takes less time to play while using other design features to ensure it remains a challenge to all skill levels, lengthening it is not an appropriate solution. Instead, turn to strategic design to defend the golf course, and use contouring, deliberate hazard placement and variety of shot value to encourage the golfer to think and use their imagination.
2. Severity and Location of Hazards

Golf course hazards come in unlimited combinations of type, shape, and size. However they all have the same purpose, to penalize arrant golf shots. In wanting to avoid them, hazards influence shot making decisions and create a strategy of play (Hurdzan, 2006). Although there are many elements on a golf course that are designed to be penal, the governing body of golf, the Royal and Ancient (R&A) defines a hazard as one of two things: water or sand bunkers. Beyond the sea that borders all four of the key informant properties, there are very few internal water hazards on these courses. Because the presence of the sea is entirely unchangeable, the focus and reliance on hazards is largely placed on size, severity, and location of bunkers.

North Berwick increases the pace of play by limiting the number of bunkers on the course. As put by Alan Minto, the lack of bunkers affords less time for raking and more time getting on with it. This is not to say that the golf course is left undefended or posses less challenge, they simply guard it in other ways. This primarily includes placing the few bunkers they do have in strategic locations to inflict the most challenge for only highly skilled golfers who require a greater contest. They incorporate other principles of strategic design such as contouring and risk reward scenarios to provide challenge and appeal all while protecting the integrity of the layout.

The elements that control the severity of a bunker are steepness of the face, depth, slope, and type of sand. All of these elements increase the difficulty of recovery, which increases the amount of time it takes a player to escape from the bunker and move on with the round. The severity of penalization is always amplified in higher handicap golfers. But as indicated by Neil Hampton of Royal Dornoch, it is not the severity of an individual bunker that concerns them, (their bunkers they are the definition of severe – steep, sloping, deep), but rather the strategic
placement of the bunker that is most significant. It is possible to increase the pace of play not by decreasing the severity of bunkers, but by strategically locating them so they will be a challenge only for expert golfers.

3. Height and Location of Rough

Although rough is not by definition a hazard, its purpose is the same. There are many lengths and types of rough that are all designed to penalize arrant golf shots. The longer the rough, the more difficult the recovery becomes due to its interference with the club. In instances where rough is very long and thick the ball will settle in the canopy and make recovering from a poor lie and putting the ball back in play time consuming. Not only because the golfer is spending time looking for arrant golf shots (often the ball is lost in the tall grass), but also because shots out of the rough are difficult to control and don’t go as far, will often require more shots to complete the recovery. As Michael Hurdzan says in *Golf Course Architecture*, a great strategic golf course can be reduced to an extremely difficult and penal golf course simply by mismanaging mowing heights in areas where the average golfer hits the ball (Hurdzan, 2006).

When asked how North Berwick maintains a very quick pace of play, Alan Minto responded by highlighting their decision to limit the amount of rough and fescue on the golf course. This allows for golfers to quickly and easily find their balls and spend virtually no time looking for balls. By strategically locating rough and fescue, a designer can limit the effect of penal rough to only challenge more skilled golfers who have the ability to recover from the rough quickly and effectively. Narrow fairways lined with rough and encroaching fescue has the biggest impact on higher handicap players, as they are the ones who find recovery from these penal features the most time consuming. By limiting the amount of shots that higher handicap
players must hit out of the long grass, the of pace of play will increase and the amount of time it takes to play golf will decrease.

**Design Solutions That Address the Difficulty of the Game**

Recap: The third era of golf course development was heavily fueled by real estate development, championship quality courses, competitive national rankings, and high profile architects. All of which validated a “bigger is better” mentality. Here began a large shift away from strategic design towards more penal and heroic principles, consequently designing the most difficult golf courses of the century.

**Return to Strategic Design**

Difficulty was not cited as a participation limitation in Scotland, nor was it mentioned by any of the four key informants as an attractor or deterrent. Neil Hampton of Royal Dornoch spoke of how the course offers a challenge to golfers that tests not only their shot making skill, but their strategic decision making process as well. Dornoch poses a challenge to highly skilled golfers, but also provides a layout for those with less skill to enjoy as well. And Hampton attributes such a fine balance of challenge and enjoyment to the cleverly strategic design of Dornoch.

Similar to Toronto Golf Club, North Berwick is known for its inclusion of all types of golfers; kids, women and seniors alike. Alan Minto representing North Berwick says that the course is just a lot of fun to play, and people don’t tire of it. It intrigues the traditional golfer, yet appeals to the more outgoing player as well. Factors such as limited rough, minimal bunkering, no forced carries, and short yardage will provide a less frustrating and difficult experience for
higher handicap golfers. However if these elements are used sparingly but strategically located on a golf course, they will provide a challenging test to higher skilled golfers as well. Using strategic design philosophies will challenge the best players in the world who require such obstacles, yet provide alternative options to create an enjoyable experience for less skilled golfers as well.

The elements listed by the USGA said to contribute to the difficulty of a golf course, only contribute to a certain extent. Beyond these factors such as rough height, green surrounds, and overall yardage, the difficulty of a course can be better understood by what design philosophy was used to institute these hazards into the layout. A golf course can have rough and narrow fairways, but if they are strategically placed in a position that only affects highly skilled golfers, the course will be less difficult for the average player.

There were factors of difficulty listed by the USGA that were not mentioned during any of the key informant interviews. That is not to say that the locations of the tee boxes, firmness of the fairway, green speed and firmness, and hole locations do not contribute to the level of difficulty, simply that they were not discussed by any of the key informants.

**Design Solutions That Address the High Costs Required to Play**

Recap: The third era of “bigger is better” golf course development had a profound impact on the cost of building and maintaining a golf course. This era of golf course development was heavily designed, shaped, contoured, planted, and irrigated; all of which cost money. And a larger property with lavish features and abundant hazards requires more maintenance after initial construction. A return to strategic design will not only minimize initial construction costs, but also mitigate annual maintenance costs as well.
Lower Construction and Maintenance Costs

As listed in James Francis Moore’s report on construction and maintenance practices, building fewer sand bunkers will reduce both initial construction and subsequent maintenance costs. Alan Minto remarked that North Berwick doesn’t have many bunkers, not only speeding up play, but also mitigating the amount of maintenance the course requires.

Moore speaks of selecting a site that requires as little earthwork as possible. The original creation of Old Course, North Berwick, and Royal Dornoch required no earthwork whatsoever, and very little has changed since then. The plot of land simply evolved into a golf course and was formed to sit within the existing landscape. Although such a practice is much more ideal in Scotland due to the sandy soil and limited vegetation, the principle remains transferable. As exampled by Banff Springs, Toronto Golf Club, and Mississaugua Golf and Country Club, no matter the site, let the existing landforms dictate the golf design rather than the golf design dictate the landforms.

The vegetated areas of all four Scottish golf courses are largely comprised of native grasses, fescues, and plants. Due to the resilience and durability of native plants, they require very little maintenance or irrigation. By limiting the amount of time and manpower required to maintain the vegetated areas of a golf course the cost will decrease. By using native plants that do not require as much water, as instituted by Toronto Golf Club, you will decrease the hydro bills and the wages required to operate the irrigation system.

The longest yardage at Trump International Golf Links is 7428 yards (6.8 kilometers), and no matter age, skill, or income, all golfers are required to walk. This goes for North Berwick, Royal Dornoch, and the Old Course as well. Moore describes the importance of building a golf course that is walkable. Minimizing steep inclines and reducing the distance
between the green and proceeding tee will encourage golfers to walk the course, thus saving them upwards of $20 in cart fees per round.

However when it comes to establishing reasonable maintenance standards, the philosophy of North Berwick is slightly compromised. To increase pace of play, they succumb to rigorous maintenance practices. Having very little rough and fescue on the golf course requires a lot of trimming and cutting. In fact it requires much more maintenance than other courses that allow native grasses to grow longer and more liberally. Furthermore, North Berwick, Royal Dornoch, and the Old Course site the complex fairway and green contouring as an integral part of the golf course. However they were not concerned in mitigating these slopes during initial construction to lower the cost because these contours were part of the existing landforms. Lastly there was no discussion by the key informants on the importance of building agronomically sound, sensible greens.

As revealed in the integrated literature review and confirmed by the key informants, minimizing hazards, limiting overall yardage, reducing earthwork, using native plants, and designing a walkable layout will mitigate the cost of golfing. By instituting one, or all of these practices, golf courses will be able to lower initial construction fees and reduce subsequent maintenance costs. To ensure that fewer hazards and less overall yardage will not jeopardize the courses’ defenses, implore strategic design principles. By emphasizing quality over quantity, variety of shot value, and providing many routes to get to the green, the course will only challenge the highest skilled players and remain enjoyable for all skill levels and.
Design Solution Conclusion

As revealed in the scholarship of integration and confirmed by the key informants, maintaining a reasonable playing length, limiting the number of hazards, and minimizing the height and location of rough will decrease the amount of time it takes to play golf. In addition to reducing forced carries, the same solutions that increase the pace of play will subsequently reduce the difficulty of the game. Designing a golf course that fits the existing land will reduce input and lower costs. Additionally, by designing a walkable layout, limiting the amount of hazards, and controlling overall yardage will also mitigate construction and maintenance costs. However, although minimizing the height and location of rough will increase pace of play and reduce the level of difficulty, it has a negative impact on affordably, as more cutting, trimming, and maintaining leads to higher costs.

The biggest apprehension with instituting these design solutions in isolation is that the course will no longer be defended, and higher skilled golfers will not find it challenging or interesting. As stated by North Berwick, Royal Dornoch, and the Old Course, Banff Springs, Toronto Golf Club, and Cutten Fields, it is imperative to couple the design solutions with the implementation of strategic design. Implementing the recommended design solutions using strategic design philosophies will increase golfer participation without jeopardizing the defenses, challenge, or wide appeal of a golf course.
Chapter Six – Observations and Conclusions

Summary of Research

The primary goal of this research was to identify solutions to factors that are currently limiting golfer participation. Information on the history, design philosophies, and state of the golf industry was collected through a scholarship of integration to gain an understanding of the context and trends of the golfing population to better address participation limitations. This information was then combined with the information gained through four Scottish, and four Canadian golf course superintendents to develop design solutions that address the decline of the golfing population. The intent of these solutions was to alleviate participation limitations that golfers are experiencing and provide alternative methods of design that will encourage more people to golf.

The integrative literature review revealed that the global golfing population was declining and attributed this regression to three main controllable factors: time, difficulty, and cost. As shown in the literature and confirmed by the key informants, maintaining a reasonable playing length, limiting the number of hazards, and minimizing the height and location of rough will decrease the amount of time it takes to play. The same solutions that increase the pace of play will subsequently reduce the difficulty of the game. Designing a golf course that fits the existing land will reduce input and lower costs. Additionally, by designing a walkable layout, limiting the amount of hazards, and controlling overall yardage will also mitigate construction and maintenance costs. However, although minimizing the height and location of rough will increase pace of play and reduce the level of difficulty, it has a negative impact on affordably, as more cutting, trimming, and maintaining leads to higher cost.
However employing these recommendations alone, without the use of strategic design philosophy, will not produce optimal results. The combination of reducing time, difficulty, and cost, while maintaining an enjoyable and challenging layout is ideal. By using strategic design to emphasize risk and reward scenarios, provide variation in shot values, and locate hazards so that they will be a challenge only for expert golfers you will appeal to wide variety of player. And as exampled by North Berwick, Royal Dornoch, and the Old Course, Banff Springs, Toronto Golf Club, and Cutten Fields, employing strategic golf design will ensure that the layout appeals to all skill levels. Implementing the recommended design solutions using strategic design philosophies will increase golfer participation without jeopardizing the defenses, challenge, or wide appeal of a golf course.

**Applicability of Design Solutions**

The proposed design solution recommendations are based on a synthesis of participation limitations that were gathered from the three largest golfing markets of North America, Europe, and Asia. Although the integrative literature review was focused on the participation trends of specific markets, the recommended design solutions are not site specific and therefore are transferable to any golf course worldwide. As long as the playability, strategic, and aesthetic requirements of an existing course are upheld, the solutions can be integrated into public, private, resort, or championship courses. The design solutions may be applied to varying types of golf courses including links, parkland, heath-land, or desert style courses without detracting from its existing identity.

The design solutions are also applicable to renovations or restorations of existing golf courses. The solutions provide design implications that can be applied to a varying extent. They
are readily applicable to existing golf courses that seek to address one or all of the uncovered participation limitations. In terms of addressing time and difficulty of a golf course by altering the location and height of rough, there is no construction required, rather a change in maintenance practices. Therefore depending on the extent of the budget, policies, management practices, and limitations experienced by an existing golf course, the design guidelines can be applied to a corresponding extent.

Limitations of the Study

Due to the limitation of travel funds and time available, it was not possible to conduct person-to-person interviews for both Scottish and Canadian key informants. It is possible that this differentiated the quality and depth of response given by those interviewed via email. It also limited the opportunity for the interviewer to shape the interview in real time to further uncover or elaborate on the depth of a response. A phone interview would be a better interview method as it provides an opportunity for the interviewer to shape the conversation and elaborate and interpret responses in real time. Due to limited resources of the researcher, the number of key informants was limited to eight superintendents. A larger sample size from a wider breadth of countries would have provided a better representation of golf course design and maintenance. However, the intent of the key informant interviews was to confirm or deny the information collected through the scholarship of integration and to provide current perspectives of the golf industry from leading golf courses in Scotland and Canada. The breadth of key informant interviews was limited only to golf courses that have successfully experienced a high degree of prosperity in traditional terms of rankings, notoriety, popularity, and industry respect.
Although golf course architects may have the most knowledge and experience in suggesting what is the best design for a specific project, the owner of the property and those who are employing the architect have the ultimate say. Therefore although these guidelines might uncover the best practices and design solutions to increasing golfer participation, their implementation depends on if the management and owner of a golf course accept them. Once the design is constructed and the architect moves on to the next project, the course’s superintendent is then placed in charge to uphold the design particulars. Therefore the integrity, maintenance, and upkeep of the original design intent are then left in the hands of the superintendent.

**Future Research**

As previously mentioned, a limitation of the study was that the key informants were chosen based on their traditional definitions of success (longevity, world ranking, notoriety within the golf industry). There are however many other definitions of success, including golf courses that may not have a deep history, a high world ranking, and aren’t well known within the golf industry. Such courses may have their own separate and distinct methods that contribute to their success. Moreover, only superintendents from Scotland and Canada were interviewed. Further research involving a more global reach could produce a wider and more in-depth response to participation limitations.

More research is needed regarding better management practices as industry technology is constantly changing and improving. Furthermore, as stated by many of the key informants, it is important for a golf course to fit the landscape and mitigate the impact it has on the surrounding environment. Further exploration and research would be beneficial in better
understanding the effects that implementing the suggested design guidelines would have on the ecology and sustainability of a golf course.

An appropriate way to evaluate the success of design solutions is to implement them. Future research involving the implementation of the proposed design solutions on a specific site would produce a better understanding of the implications and determine to what degree the design mitigates the participation limitations.

Although strategic design is a very successful design philosophy that is still widely used by architects today, the principles of strategic design are over 150 years old. Future research would be beneficial to develop an advanced and modernized version of strategic design. This neo-strategic design philosophy would evolve to incorporate elements valued by today’s golf industry including the shift towards environmental stewardship, minimalism, habitat conservation, and sustainable water usage. Neo-strategic design would retain its founding principles such as providing risk/reward scenarios and various routes to the green, but would also address best maintenance practices and design solutions to reducing operational costs. Today’s modern golfer requires a less time consuming sport, so neo-strategic will recognize this requirement and address it through rough location and height, hazard placement, and playing length to increase the pace-of-play.
References


Western Turf. (2012). *Seeing Clearly: With an eye to the past, the industry looks to the future.* Harris Publishing.