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THE CHANGING FACE OF THE GAME AND GOLF'S BUILT ENVIRONMENT

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ABSTRACT

The history of golf's built environment in the U.S. has reflected the changing face of the game in terms of the number and type of golf courses built, as well as the demographic profile of those playing the game. This study offers insight as to how various socio-cultural and economic forces have impacted the game and golf course development. Since 2000, the golf industry has experienced significant declines in the key barometers of its economic wellbeing as defined by: the decline in the number of golfers and rounds played and the decrease in the number of golf courses.

The literature review and situation analysis led to the hypothesis that "…the nature and type of courses built or renovated during the 1990s development boom were more costly, longer, more difficult and took longer to play compared to the golf courses built during the previous golf course development boom periods in the 1920s and 1960s." And, this paradigm change in golf's built environment may have been a contributing factor in the decline of golf participation and the economic viability of the golf course business.

In order to determine if there has been a paradigm change in golf's built environment during the 1990s, an analysis of the National Golf Foundation (NGF) Golf Facility Database was undertaken. The key variables of interest that characterized the nature and type of golf courses built were identified in order to provide measurements for testing the hypothesis and to explain how and why golf's built environment had changed. The quantitative analyses included both a univariate analysis and an Analysis of Variance (ANOVA). The qualitative analysis was based upon both a literature review and 12 in-

depth expert interviews with prominent golf community real estate developers and golf course architects.

The univariate analysis profiled and described how the golf courses built in the 1990s were more costly, longer, more difficult and took longer to play; and, the ANOVA found that the differences in the key variables of interest for the golf courses built in the 1990s golf courses, compared to the golf courses built in the 1920s and 1960s, were statistically significant, which supports the research hypothesis.

Since 40% of the golf courses built during the 1990s were tied to real estate development, in-depth expert interviews were undertaken with some of the most prominent real estate developers such as John Reed and Bob Whitley and golf course architects such as Greg Norman and Tom Fazio. The consensus among the developers was that master planned communities that had a high profile golf course as a featured community amenity were able to command premium real estate lot prices and to increase sales turnover. In addition, the architects were motivated to design difficult golf courses that would enhance their reputation and, therefore, increase their professional fees. This financial incentive led to the development of golf courses that were more costly, more difficult and took longer for the average golfer to play.

ACKNOWLEDGEMENTS

Dr. Elaine Worzala, my academic advisor and the chair of my dissertation committee, provided the insight and inspiration for the conduct of this research regarding the paradigm changes in golf's built environment. Her input, advice and support were invaluable in completing this study. I am also indebted to my dissertation committee members: Dr. James London, who provided perspective and guidance regarding the underlying issues pertaining to golf course sustainability; Dr. Thomas Baker, who shared his expertise and helped me with the quantitative analyses; Dr. Joe Beditz, whose vast knowledge of the golf industry coupled with the provision of the National Golf Foundation research resources made this study possible.

The response and cooperation from the golf course developers and golf course architects interviewees was extraordinary. The interviews were planned to take no longer than 45-minutes, but they often ran more than two hours at their instigation. They provided invaluable background information and perspective that I had never considered or realized, even though I had extensive experience in the development and operation of golf courses. This qualitative method was a rich source of information that provided a depth of understanding that was not revealed in the literature review and quantitative analysis. Three individuals deserve special note for their help and advice – John Reed, who helped me understand the role of a golf course in real estate development from the developer's standpoint, and golf course architects, Bobby Weed and Bob Walker, who over the course of several interviews each, shared their expertise, experience and opinions regarding the driving forces that shaped the game and the golf course business.

I am also thankful to Dr. Dave Wyman, who shared his passion for this research in the golf industry, and more importantly, challenged my thinking and analyses as my doctoral research progressed. On a non-academic side, I am thoroughly indebted to former PGA Tour Commissioner, Deane Beman, who has been a mentor in my business career and who provided the initial encouragement to pursue sustainable golf course development when I told him that I was returning to academia after a 30-year absence.

I would like to give special thanks to my wife, Cindy Hueber, who was a constant source of love, understanding and encouragement for this new chapter in my life. My son, Benjamin, who is a practicing attorney and has a MBA was also an inspiration and supportive of this sojourn. When I expressed some misgivings about how I would be perceived by the younger students, his astute advice was simply that I would be a non-traditional student and that most would not care or they would think that I was a professor.

Finally, I would like to dedicate this PhD to my parents. With seven kids, my mom, Opal Hueber, endeared us all with her humor and encouraged us to be and to do whatever we hoped to achieve in life. And, my dad, Bud Hueber, a former PGA golf professional, who instilled his passion for the game into me, which grew and became the special bond that we shared in our time together.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

1.1 Overview

The literature review and research analysis of golf course development during the 20th century provides a different historical perspective from other researchers in understanding how and why the game and golf course business has changed. No one has ever identified or analyzed the driving forces that have precipitated the paradigm changes in golf's built environment that may have reshaped the nature and type of golf courses built as well as the demographic profile of those playing the game. This is understandable; paradigm changes often go unnoticed because they are not recognized until well after they have occurred and the new paradigm is apparent to all (Barker, 1992).

During the 20th century, there were three "boom" periods of accelerated golf course development that peaked in 1930, 1970 and 2000. The first boom in the 1920s built private golf courses for the upper class. The second boom in the 1960s built public golf courses for the burgeoning middle class. And, the third boom in the 1990s built golf courses in anticipation of the latent demand from the huge "Baby Boomer" generation who were expected to play more often as they aged, entered the prime of their working lives and later retired. While the first two golf course development booms were driven in response to actual socio-cultural and economic phenomena, the third boom was

anticipatory in nature and driven more by the real estate speculation on the part of both the real estate developers and buyers.

According to the National Golf Foundation (NGF), more than 40% of the golf courses built in the 1990s were tied to master planned communities; therefore, real estate developers played an influential role in promulgating the development of upscale golf courses that served as an amenity in selling real estate at premium prices. Typically, the golf courses' operations were subsidized, because developers were interested primarily in selling real estate. The conventional wisdom was that golf courses that had "big name" architects and that were famous for their difficulty led to higher property values. This real estate development strategy led to the development of longer golf courses, which maximized the number of premium priced golf course frontage lots.

Ironically, this real estate development strategy also indirectly inspired many existing golf courses as well as many entrepreneurial developers of public golf courses that did not have a real estate tie-in, to build more costly, longer and more difficult golf courses, because they wanted to offer a "country club for a day" golf experience that was competitive with the real estate developers' golf course product. Unfortunately, when the U.S. economy and real estate market soured, the golf industry inherited a large inventory of golf courses that were not economically sustainable. Too many golf courses were built where they were not needed; too much was spent on developing these golf courses and these golf courses were too costly to maintain. As a result, the cost for playing a round of golf increased.

Furthermore, these golf courses were too difficult for the average golfer; and, it took more time to play a round of golf on these longer and more difficult golf courses. It was a perfect storm of unintended consequences that created golf courses that did not meet the needs of its customers and that were not economically viable.

1.2 Situational Analysis

The situational analysis reveals that since 2000, the golf industry has experienced significant declines in the key barometers of its economic wellbeing as defined and measured by the number of golfers, the number of golf rounds and the net increase (decrease) in the number of golf courses (Beditz & Kass, 2009). NGF research reveals that the percentage of the overall population that plays golf has declined over the past 20 years. In 1990, the percentage of the population that played golf was 12.1%, by 2000 it was 11.1% and by 2010 it was down to 10.2%. During the first nine years of the 2000 to 2010 decade, rounds played were down 5.7%, from 518.4 million in 2001 to 463 million rounds played in 2011 (Beditz, 2012).

Consequently, the golf industry is in the midst of a major crisis in the economic viability of its built environment. NGF research reports there have been more than 1,000 golf course closures over the past decade, ranging from a low of 32 in 2001 to a high of 146 in 2006 to an estimated 104.5 in 2011. The "Net Growth" (number of golf course openings versus closings) has been negative between 2006 through 2011, a trend that has not occurred since the Great Depression. During the 1990s, the supply of golf courses increased 20.6%, and the demand for golf (rounds played), increased by 14.8%. The impact of having excess supply and less demand since 2000 can be translated into a lower

average number of golf rounds on a per golf course basis. Accordingly, the number of rounds played per 18-hole equivalent golf course has decreased by 12% from 36,333 in 2001, to 31,299 in 2011 (Beditz, 2012).

1.3 Research Hypothesis

The nature and type of courses built or renovated during the 1990s golf course development boom were more costly, longer, more difficult and took longer to play compared to the golf courses built during the previous golf course development boom periods in the 1920s and 1960s.

Additionally, this research will explore how and why the paradigm change in golf's built environment occurred and the role this may have played in the decline of golf participation and the economic viability of the golf course business.

Research Questions

How and why has the nature and type of golf courses changed during the golf course development boom in the 1990s? Related questions include the following:

1. Were the golf courses built during the 1990s more costly for the golfers to play compared to the golf courses built in the 1920s and 1960s?
2. Were the golf courses built in the 1990's longer (total golf course length measured in yardage) than the golf courses built in the 1920s and 1960s?
3. Were the golf courses built in the 1990s more difficult to play (as measured by USGA Slope the Course Ratings systems) compared to the golf courses that were built during the 1920s and 1960s?

4. What role did real estate developers play in golf course development in the 1990s?
5. What role did golf course architects play in golf course development in the 1990s?

1.4 Research Design

The Research Design plan was to undertake a "descriptive" study using mixed methods to test the hypothesis that there has been a material change in the nature and type of golf courses built during the golf course development boom in the 1990s, compared to the golf courses built during the development boom periods of the 1920s and 1960s. How and why this paradigm change occurred was described, in part, by the literature and archival research review.

The primary research focus was the quantitative analysis of the descriptive statistics contained in NGF Golf Facility Database list of all 16,000 U.S. golf courses; however, there was additional data needed for this analysis that was not contained in the NGF Database. At the instigation of this researcher, the NGF conducted a survey to collect data on the time it takes a foursome to play a round of golf, if the golf course was tied to a real estate development and whether or not capital expenditures were made to make the golf courses longer and more difficult to play.

The quantitative analysis included both a univariate analysis and an Analysis of Variance (ANOVA). The qualitative analysis was based upon the literature review and the conduct of 12 in-depth expert interviews with prominent golf community real estate

developers and golf course architects. These interviews provided additional insight and understanding regarding the research questions.

This research analyzed data drawn from: 1) Literature review, 2) NGF Golf Facility Database, 3) NGF *Pace of Play* study, and 4) In-depth expert interviews.

Literature Review

The literature review analyzed the history of golf course development during the 20th century, and offered a different perspective from other historical researchers regarding the driving forces for the three boom and bust periods in U.S. golf course construction activity. Analysis of these paradigm shifts in golf's built environment and the demand for the game of golf provided insight as to how the game and business of golf had responded to the various socio-cultural and economic factors that have redirected and reshaped the game and the golf course business.

The literature review and analysis of industry research established the basis for the situational analysis and formulation of the problem statement. The NGF Synovate national survey of golfers identified the top three barriers to golf participation as being the cost, difficulty and time it takes to play golf, which provides the underlying basis in the formulation of the theory, research hypothesis and questions that formulate the theoretical framework for the research design.[1]

[1] Synovate is a leading global market research firm in Chicago, IL. The NGF Synovate Study has been conducted every January since 1986. This survey of at least 20,000 Americans focuses on golf participation via samples drawn from the Synovate panel comprised of over two million people. Prior to 2007, surveys were sent via mail; now they are fielded online.

NGF Golf Facility Database

The analysis of the NGF Golf Facility Database described and defined the change in the nature and type of the golf courses built/renovated during the 1990s. The research objective was to test the hypothesis that the predominant type of golf courses built during the 1990s development boom period, as measured by the variables of interest (cost, difficulty and time), were significantly different compared to the same variable measurements for golf courses built during the two previous development boom periods in the 1920s and 1960s.

The NGF's listing of every golf course in the U.S. is an actual census and contains the descriptive data regarding the key variables of interest that reflect the change in the nature and type of golf courses built during each of the three development boom periods.

NGF *Pace of Play* Study

The NGF database does not contain all of the descriptive data needed for this research. Specifically, there was no data regarding how long it takes to play a round of golf, and there was no data to determine if the golf courses built during one of the three development boom periods undertook any golf course renovations to lengthen the golf courses and/or to make them more difficult for the average golfer to play. So, the NGF decided to undertake an on-line survey of golf course operators in March of 2012 to gather that information.

Expert Interviews

In-depth expert interviews were undertaken with seven prominent real estate developers and five golf course architects to identify and validate the propositions regarding their motivations, interests and influence in building golf courses during the 1990s that were more costly, longer and more difficult for the average golfers to play.

1.5 Importance of Study

The univariate analysis examines the key variables of interest and found statistically significant differences in the cost of playing golf, the length and difficulty of the golf courses and the time it takes a foursome to play a round for the golf courses built in the 1990s, compared to the same data for the golf courses built during the 1920s and 1960s. The Analysis of Variance (ANOVA) determined that there were statistically significant differences in the group means for the golf courses built in the 1990s, compared to the golf courses built in the 1920s and 1960s golf course development eras.

This research is important because the golf industry does not seem to be cognizant of the change in the nature of the golf course supply and the demand for the game. The ramifications of this paradigm change in golf's built environment and its potential adverse impact on the economic health and vitality of the industry is not understood. The rival explanation and conventional wisdom among golf industry pundits is that the current imbalance in supply and demand will fix itself once there are 1,500 to 2,000 fewer golf courses. This assumes that demand, as expressed in terms of the total number of golf rounds played, remains the same with fewer golf courses getting a larger slice of the same size pie. However, since 2000, there are fewer golf courses, and the percentage

of the population who play golf and the number of golf rounds played have both decreased.

This research identifies and defines the paradigm shift in golf's built environment during the 1990s. It describes how and why it occurred and then offers some explanation regarding the role that change may have played in the development of unsustainable golf courses. This research identifies new areas for future research regarding the impact of the identified variables of interest (cost, length, slope, course rating and time) on golf participation and the economic viability of golf courses and golf communities; and, importantly, this research has laid the foundation for future research regarding the merits of fostering the development of sustainable golf courses.

1.6 Outline of Research

This thesis is divided into seven chapters. Chapter 1 provided some background information that described the changes in the nature and type of golf courses built during the three golf course development boom periods in the 20th century. This chapter also presented the framework for the research plan.

Chapter 2 contains the literature review and analysis of previous research.

Chapter 3 describes the research design and methodology used in the conduct of this descriptive study that will explain how and why golf's built environment has changed; and, will test the hypothesis that "The nature and type of courses built (or renovated) during the 1990s development boom were longer, more difficult and more expensive to play compared to the golf courses built during the previous golf course development boom periods in the 1920s and 1960s."

Chapter 4 presents the quantitative analysis to determine if there has been a paradigm change in golf's built environment during the 1990s. This quantitative analysis includes both a univariate and bivariate analyses. The univariate analysis will describe how the variables of interest for the golf courses built during the 1990s golf course development boom period differed from the golf courses built during the 1920s and 1960s boom periods. The bivariate Analysis of Variance (ANOVA) will test the null hypothesis that the group means for the golf courses built during the 1920s, the 1960s and the 1990s development decades are equivalent. If the null hypothesis is rejected, it will provide evidence to support the research hypothesis that there are statistically significant differences between the group means for the golf courses built in the 1990s, compared to group means for the golf courses built in the 1920s and 1960s.

Chapter 5 undertakes a qualitative study to explain how and why golf's built environment has changed, and is based upon the literature review and the conduct of 12 in-depth expert interviews. The in-depth expert interviews will explore and examine the influence of the real estate developers and the golf architects in order to understand how and why they had developed golf courses in the 1990s that were too costly, too difficult and took too long to play for the average golfer to play.

Chapter 6 discusses the uncertain prospects for golf community development in light of the changing business conditions and consumer preferences. Also, it is expected that future real estate development will focus more on the real estate buyers changing lifestyle and social consciousness including sustainable golf course development. Several

alternative approaches for the development or redevelopment of sustainable golf communities are presented.

Chapter 7 highlights the research and presents the study conclusions to explain how and why “The nature and type of courses built or renovated during the 1990s development boom were more costly, longer, more difficult and took longer to play, compared to the golf courses built during the previous golf course development boom periods in the 1920s and 1960s.”This chapter also lays the foundation for future research regarding the merits of fostering the development of sustainable golf courses.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section explains that during the 20th century, there were three "boom" periods of golf course development. The first boom period occurred during the "Roaring 20s" and targeted the economic elite in building private golf clubs. The second boom period occurred during the 1960s with the emergence of the middle class as an expanding market for public golf courses. The third boom period occurred during the 1990s in anticipation of the latent demand from the huge post WWII "Baby Boomer" generation, who were expected to play more golf as they entered the prime of their working lives and eventually the early stages of retirement. These three "boom" periods were followed by "busts" that reflected socio-cultural and economic changes in terms of who was playing the game, as well as the nature and type of golf courses built during those eras.

Section 2.2 of the literature review analyzes the history of golf course development during the 20th century, and offers a different perspective from other historical researchers regarding the changing nature and causes for the boom and bust cycles in U.S. golf course construction activity.

Section 2.3 focuses on the third boom in golf course development and reveals how the marriage between golf and real estate development led to the development of a business model whereby too many golf courses were built, too much was spent on developing these golf courses and many of these golf courses were not financially viable

enterprises. Consequently, these golf courses were often too expensive, too difficult and took too long to play for the average golfers. This may have played a role in the downturn in the demand for the game and eventually led to the golf industry having a large number of unsustainable golf courses that did not meet the needs of the golf's ultimate consumers.

Section 2.4 analyzes recent academic literature that examines the anecdotal rationale for the golf course/real estate business model that used golf courses as an amenity to increase property values and to sell real estate. The conventional wisdom of the trade and developers is given some academic scrutiny to determine if those a priori marketing assumptions and business strategies were valid.

Section 2.5 defines the current state of the game and identifies the major economic and business issues confronting the future health and vitality of the golf course business. The hypothesis is that during the golf course development boom of the 1990s, there was a substantive change in the nature and type of the golf courses built that had an adverse impact on the health and economic vitality of the golf industry.

Section 2.6 provides the summary analysis of the literature review and defines the research objective in providing evidence of the paradigm shift in golf's built environment that may have contributed to the decline in the demand for golf and eroded the economic viability of many golf courses. The research design plan and strategy is presented.

2.2 Golf's Built Environment

Since 1900, golf has grown from about 1,000 golf courses and an estimated 125,000 golfers, to over 16,000 golf facilities and an estimated 30 million golfers by the

year 2000 (NGF, 2011a – 2011d). This may be surprising to some, but golf has evolved from being a game played predominantly by the upper class at private clubs to a game that is played predominantly by the middle class at public golf courses. According to NGF research, 80% of the golf courses were private in 1930; and, by the close of the century, only 28% of the golf courses were private with 80% of the rounds played being on public golf courses. This turnabout reflects the democratization of the game in terms of the number and type of golf courses built as well as the demographic profile of the golfers who played the game.

There has been a great deal written about the history of golf, its leading players and famous golf course designers; however, there has not been any academic research regarding how and why golf's built environment has changed. Adams and Rooney (1985) and Napton and Laingen (2008) both described the growth of golf in the context of societal and economic changes, but they did not explain, describe, and/or define these changes in terms of their impact on the nature and type of golf courses built, which is the focus of this research.

Napton and Laingen identified four "Epochs" in golf course development. The first Epoch (1878–1919) was described as "Urban, Elite Beginnings," which reflected where the first golf courses were built and who played the game. The second Epoch (1920–1949) was oxymoronically entitled "Growth and Stagnation during Turbulent Times" because it illustrated golf's rollercoaster ride through the carefree economic times of the Roaring Twenties, to the cataclysmic 1929 stock market crash and depths of the Great Depression in the 1930s, to the gradually recovering economy that followed the

massive governmental spending of the "New Deal" and the funding of WWII. The third Epoch (1950–1969), deemed "Increased Leisure Time and Affluence" marked a period of considerable growth in the number of golf courses as well as in the changing mix of private versus public golf courses. The fourth Epoch (1970–2000) was ordained "Maturation and Saturation," describing an era when more than 7,000 golf courses were built without providing much insight as to the nature and significance of the changes in golf's built environment. Adams' and Rooney's work was completed before the third boom in golf course development occurred in the 1990s. These authors did not probe into the question as to how and why the paradigm shift occurred because they never identified and categorized the changes as being indicative of a substantive change in golf's built environment. They only observed that there was a change in the number and type of golf courses built.

This research takes a different view on many of those same facts, and identifies and focuses on the specific socio-cultural and economic drivers of golf's three golf course development boom periods in the 20th century that peaked in 1930, 1970 and 2000. Each boom period was unique in the socio-cultural and economic factors that propelled the growth in the golf course industry. Each boom was followed by a "bust" that is defined simply as a prolonged downturn in the number of golf courses built. The factors that instigated the boom and bust cycles were reflected in the number and type of golf courses built, as well as the demographic profile of those who played the game. This analysis delves deeply into the questions regarding how and why each boom and bust occurred in order to better understand and explain the current crisis confronting the golf

course business. Lastly, this approach depicts the factual evidence regarding the driving forces that shaped and spurred golf's boom and bust periods of golf course construction, which has not had any scrutiny in the literature and until now has not been defined as a paradigm change in the nature and type of golf courses built.

The first development boom in the 1920s resulted in private golf courses being built for the upper class. The second boom in the 1960s resulted in public golf courses being built for the burgeoning middle class. And, the third boom in the 1990s resulted in golf courses being built in anticipation of the latent demand from the huge "Baby Boomer" generation who were expected to begin to play more often as they aged, entered the prime of their working lives and then retired. While the first two golf course development booms were driven in response to actual socio-cultural and economic phenomenon, the third boom was more anticipatory in nature and driven more by the real estate speculation on the part of both the real estate developers and buyers.

The concept of a paradigm shift was first popularized by Thomas Kuhn when he described the nature of the revolutionary change associated with significant scientific advancements as being a "series of peaceful interludes punctuated by intellectually violent revolutions," when one way of thinking is replaced by another (Kuhn, 1962, 10). This transformation can be driven by technological advances, social, economic, cultural and/or other factors. With respect to the golf course business, all of these factors have played a role in transformation of the game and the golf course business. In hindsight, it is clear that there has been a paradigm shift in the nature and type of golf courses built during the 20th century.

Of particular significance is the golf course development boom in the 1990s. It appears that there has been a substantive change in the nature and type of golf courses built, which may have had an adverse impact on the game and the golf course business. Understanding how golf's built environment has changed through the pivotal boom periods of golf course development provides the basis for understanding and addressing the current crisis confronting the golf industry in the supply and demand for golf.

Golf's First Boom – The Roaring 20s

The first period of sustained growth in the number of golf facilities occurred during the "Roaring 20s," and peaked in 1930 just after the Stock Market Crash in 1929. Between 1923 and 1929, approximately 600 golf courses were opened each year (Adams & Rooney, 1985). By 1930, there were 5,600 golf courses and an estimated 1.1 to 1.5 million golfers. Nearly 80% of the golf courses were private clubs, and since golf was originally played predominately at private clubs, golf's image as being a game for the rich would forever brand golf as an elitist's game. Amateur sports in general, and golf specifically, was the bastion of the upper class, which explains why Francis Ouimet's 1913 U.S. Open win was more than just a "David and Goliath" victory over golf's greatest players of the time, British professional golfers Harry Vardon and Ted Ray. Ouimet was just 20-years old and won the U.S. Open at The Country Club, in Brookline, Massachusetts, where he once caddied. It was a remarkable story of class envy, struggle and intrigue as told by Frost (2002). In those days, golf was an elitists' game played predominately at private clubs.

At this time in America, there was a clear delineation of the classes and those lines were not to be crossed. Wealth was the entitlement of the few and hard toil was the consequence for the many. Golf reflected that disparity both in terms of the type of golf courses built in that era, as well as who was entitled to play the game. The underclass, the poor, the working class were not supposed to play a game like golf. They could caddy or even give golf lessons; however, they were employees and had no place on golf's fields of play. Golf was in its "Great Gatsby" period as many of these exclusive private clubs were ostentatious expressions of their memberships' wealth and as described earlier by Veblen as their "Conspicuous Consumption" (Veblen, 1998). The clubhouses were grandiose, overdone and destined to become "White Elephants" when the economic prosperity of the Roaring 20s came to a halt with the Great Depression and WWII.

The golf courses that were built also reflected the golf course construction technology and techniques of the time, as well as the limitations of the golf equipment used to play the game. Because earthmoving was difficult with horse drawn and/or rudimentary mechanized equipment, the site selected for a golf course tended to be property that required less earthmoving. Donald Ross was the foremost golf course architect of the era and is credited for designing over 600 golf courses, including such notable courses as Pinehurst No. 2, Oak Hill, Seminole and Oakland Hills (Cornish & Whitten, 1992). The original designs for these courses and other golf course designs were ingenious in their simplicity and practical in their construction techniques given the parameters and limitations of building golf courses in those days.

The golf equipment that was being used set the standards for the length of the golf holes. Since golfers could not hit the golf ball as far using hickory golf shafts and golf balls of the era, the golf course architects designed holes that were shorter in length compared to today's standards. This was significant because as golf equipment technology improved, golfers were able to hit the golf ball farther; so, it became necessary to lengthen the golf holes to preserve the score of par as being standard of golfing excellence. In fact, new golf equipment technology could outmode the fields of play. For example, in Figure 2.1, the golf ball used in the 1890s, the Gutta Percha Ball ("Guttie") was basically a solid rubber ball, and it was completely outmoded with the introduction of the Coburn Haskell (Haskell) ball around 1900 (rubber core, with tension wound rubber bands over a rubber core and a balata cover). Average golfers could hit their drives 20 yards farther with the Coburn Haskell ball. Consequently, the first few hundred golf courses built before and just after the turn of the century that were scaled for play of the "Guttie," had to be lengthened, so that they would be better suited for the golf balls that went farther (Graffis, 1975).

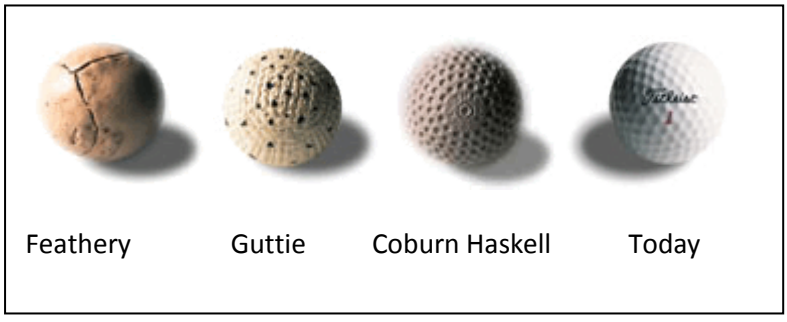

Figure 2.1: "Evolution of the golf ball"
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Golf's first boom was followed by an economic bust that devastated the golf industry for the next 20 years. Starting with the Stock Market Crash in 1929 and the Great Depression that ensued in the 1930's and WWII, golf was given a devastating blow. According to the NGF Golf Facilities Report (2011), the number of golf courses between 1930 and 1950 actually dropped from approximately 5,700 to 4,900. Importantly, the mix in the number of private versus public golf courses during this period went from a ratio of 80/20 in 1930 to 60/40 in 1950.

Private golf courses were hit the hardest by these catastrophic events and many of the private clubs were compelled to either close their doors during the Great Depression or open them to the public in order to survive. The golf industry was treading water and trying to stay afloat during these turbulent times. Not surprisingly, little golf was being played during WWII. The USGA quit hosting the U.S. Open in 1942. The PGA (then the professional golf tour) suspended operations during the war, as did Major League Baseball (MLB), the national pastime. No golf balls were being manufactured because the rubber was needed for the war effort. The National Golf Foundation had a program of repainting golf balls so that the game could still be played. Augusta National Golf Club allowed cattle to graze on its fairways to support the war effort (Graffis, 1975). When these golf courses changed from being private golf clubs to public golf courses, it afforded those of moderate means to start playing golf following the end of WWII.

Golf's Second Boom – The Emergence of the Middle Class

Golf's second boom started slowly after WWII, and accelerated in the 1960s with an average of 380 golf course openings per year during that decade. By 1970, the NGF reported that the number of golf courses had more than doubled from 4,900 in 1950 to 10,200 golf courses and there were an estimated 12.5 million golfers. The growth in the number of golf courses and golfers was driven by the growing post WWII economic expansion and the emergence of the middle class who increasingly had the time, money and inclination to spend more on recreational activities such as golf. Golf was also popularized in the 1950s and 1960s by its exposure on television as well as a golfing president, Dwight Eisenhower, and charismatic players such as Arnold Palmer, Gary Player and Jack Nicklaus. Aside from the 3,800 golf courses that were built during the 1960s, the majority of golf courses built were open to the public, changing the ratio of private versus public golf courses from 60/40 in 1950, to 50/50 by 1960, to 45/55 by 1970. The type of golf courses being built and the economic class that predominantly played the game was changing dramatically from being a game played predominantly by the upper class to a game played predominately by the middle class.

The leading architect of this era, Robert Trent Jones, Sr., was generally recognized by his peers as "the father of modern day golf course design." He is credited with designing approximately 600 golf courses around the world. His work featured many strategic design elements including expansive multiple teeing areas, large greens, the extensive use of fairway and greenside bunkers (Cornish & Whitten, 1992). The golf courses that were built between 1950 and 1970 were typically longer than the golf

courses constructed during the 1920s in order to accommodate the technological advancements in golf equipment, such as improved golf balls and golf clubs with steel shafts, as well as to provide more acreage for residential development along the edge of the golf courses.

The 1960s was also a hallmark in golf course development because real estate developers discovered that golf courses could be an amenity that enhanced lot sales values and increased sales turnover. So, the amount of acreage needed for the golf course development more than doubled to 150+ acres in the 1960s, allowing real estate developers to maximize their premium priced golf course frontage lots. Henceforth, new golf course development was tied more closely to the fortunes of the residential real estate industry and the overall U.S. economy. With the 1973 oil crisis, the stock market downturn in 1973–1974 and the recession that ensued, coupled with the high interest rates and inflation, the real estate business and the golf industry both had the economic wind knocked out of their sails. Consequently, golf course development slowed dramatically from averaging 380 new golf courses per year in the 1960s, to 150 per year in the latter part of the 1970s, to about 100 per year by the mid-1980s. At this point, many in the golf business felt that golf might be a mature industry with little headroom for growth (Hueber & Worzala, 2010).

Golf's Third Boom – The Baby Boomers:

Golf's third boom occurred in the 1990s and peaked in the year 2000 as the golf industry averaged 400 golf course openings per year throughout the decade, and culminated with over 16,000 golf facilities and nearly 30 million golfers. This golf course

development boom differed from the first boom that originated with the upper class; it differed from the second boom that was fueled by the economic emergence of the middle class. Golf's third boom was driven by the expectation that the huge "baby boomer" population segment (born between 1946 and 1964) and some 78+ million strong consumers, would have a major impact on the demand for golf as they aged, retired and decided to play golf in their golden years (Hueber & Worzala, 2010).

In the late 1970s and early 1980s, golf did not seem to fit the active life style of the Baby Boomer generation, which did not bode very well for golf's future prospects. Golf was perceived to be a game played by overweight, middle-aged white guys in double-knit plaid pants. Tennis was hot and golf was not very cool. According to the Sporting Goods Manufacturers Association (SGMA, 2009a and 2009b), tennis had an estimated 35+ million participants, and golf had less than half of that. Golf seemed to be a dying industry. It had an image of being an expensive game for the elite, even though there was abundant evidence to the contrary that it was a game played predominantly by the middle class.

In 1985, Dr. John Rooney, a geographer from Oklahoma State University, was engaged by the NGF to conduct a nationwide study on golf participation. The study revealed that there was a correlation between the percentages of the population that played golf and the number of public golf courses per capita (Adams & Rooney, 1985). This research coupled with consumer and demographic research conducted by the NGF with Synovate, Inc., revealed that golf could be at the threshold of a significant increase in demand based upon the fact that the Baby Boomer population segment had a high

percentage of golfers (NGF et al., 1986–2011); and, it was theorized that if the Baby Boomers behaved as their predecessors in retirement and played golf as frequently, there would not be enough golf courses (supply) to meet the anticipated demand. Golf's third boom was driven by the expectation that as they aged, the Baby Boomers would play golf more often because they would have the time, money and inclination to play golf.[2]

At this time, the NGF gathered the leaders of golf industry for what were called "Golf Summits" and presented this new research that promised a much more optimistic outlook for the game. The NGF then linked up with the renowned strategists at McKinsey and Company and developed a "Strategic Plan for the Growth of the Game" (NGF et al., 1987). The centerpiece for that plan was a clarion call to build "A Course a Day" from 1990 to 2000 in order for the golf industry to meet the anticipated demand for golf. The slogan of "A Course a Day" was featured in PGA Tour television public service announcements (PSAs) and caught fire with the media. This led to the new perception that there was a great opportunity for profitable investments to be made in the golf industry.

The promotional strategy worked. Billions of dollars were invested into the development of new golf courses as well other facets of the golf industry.[3] Many sectors in the golf industry such as real estate, travel, media, and golf course management companies, golf equipment companies and the PGA Tour benefited from this investment

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[2] At this time, the author, David Hueber was the NGF president and CEO. This is a first-hand analysis of what transpired during that time period.

[3] Dr. Joe Beditz, the current NGF president and CEO, estimates that over $20 billion was invested during this time period.

and expectation for the golf business. Golf became the darling of Wall Street. Professional golf also benefited as tournament purses and television ratings grew and advertising revenues for both electronic and print media soared. It was a significant achievement to makeover an entire industry's perception of itself in the 1980s as being a mature industry and possibly even a dying business, into becoming a growth industry.

During the 1990s more than a golf course a day was built; however, the impact of this growth was more far reaching than just increasing the number of golf courses and golfers. The democratization of the game was seemingly a "fete accompli" as golf, once known as an exclusive game for the elite with 80% of the golf courses being private clubs, was now a game for the middle class with 72% of the golf courses being open to the public. This represented a complete turnabout from where golf started at the beginning of the century (Figure 2.2). By the year 2000, the golf industry had 16,000 golf facilities with nearly 30 million golfers playing an estimated 520 million rounds of golf

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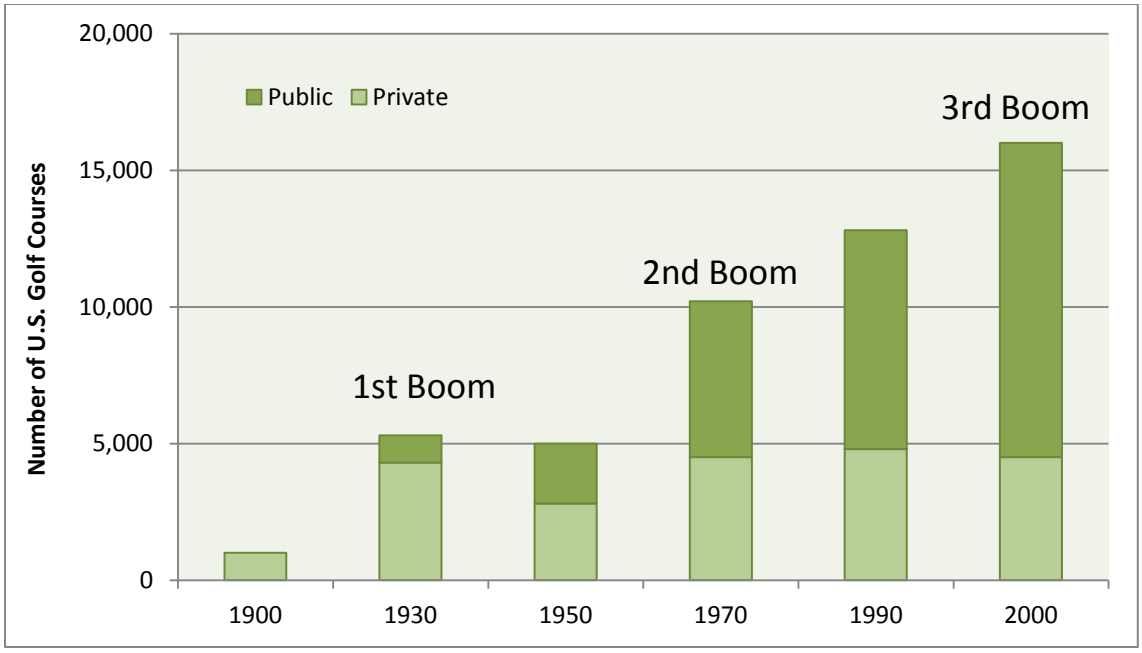

Figure 2.2: U.S. golf course development boom and bust cycles 1900-2000
Source: Hueber &Worzala (2010, 14).

It is evident that the three boom periods in golf course development were decidedly different in terms of the types of golf courses built. Generally, the golf courses built in the first development boom period were an amenity for the private country club and had a smaller footprint compared to the golf courses built during the 1960s and 1990s boom periods that were tied to real estate development. The private golf courses that were built were what are known today as "core" golf courses, meaning that the golf holes were adjacent to one another, without acreage to accommodate housing along the fairways (Muirhead & Rando, 1994). The entire facility usually occupied about one hundred acres, which is about half the acreage that has been used to build courses since the 1960s (Golf Course Superintendents Association of America (GCSAA), 2007a). Figure 2.3 illustrates the layout for a core golf course design with a driving range and clubhouse area.

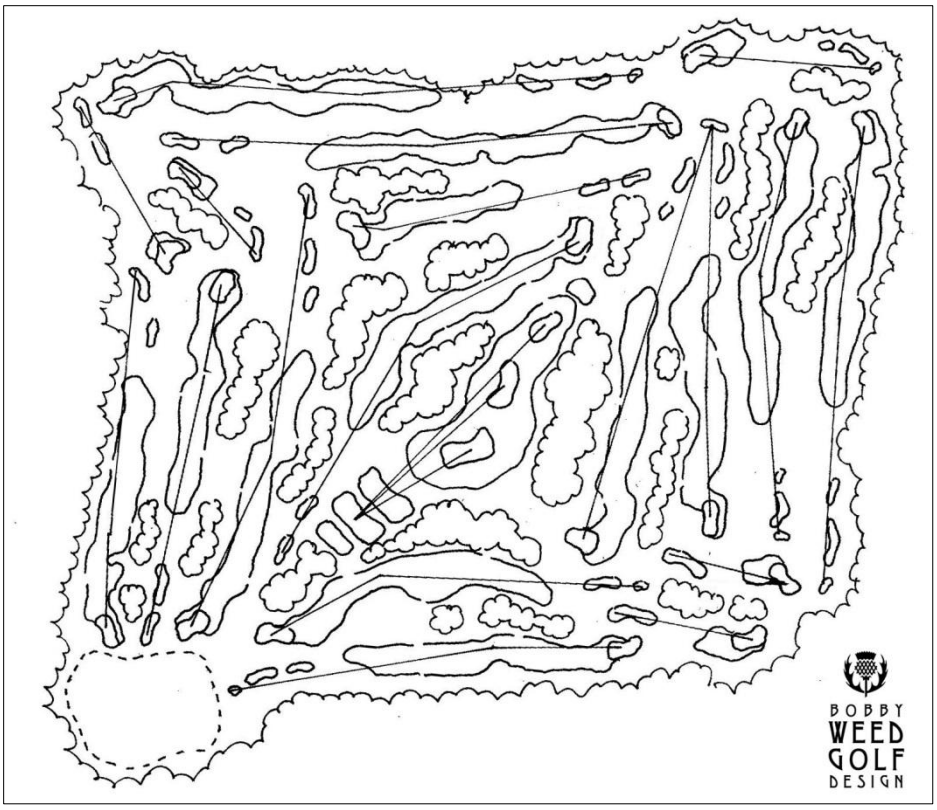

Figure 2.3: "Core" golf course design.
Source: Bobby Weed Golf Design

According to the NGF *Pace of Play* study,[4] only 3% of the golf courses built at this time had any real estate development around the perimeter of the golf course. It was inconceivable in the 1920s to have golf holes meandering through a housing development in single-file to maximize golf course lot frontage.

The golf course footprint is much larger today for a number of reasons. First, the golf courses of the 1920s did not have driving ranges that are typically 10 to 15 acres.

[4] The NGF conducted an online survey of golf course managers to identify how long it takes for a foursome to play 18-holes during the peak season as well as some other pertinent golf course operations information. This survey was sent on March 13, 2012, and the survey results were compiled and then analyzed on March 28, 2012. The NGF *Pace of Play* survey has not yet been published.

The total length of the golf course was at least 10% less than modern day golf courses, because the golfers did not hit the golf ball as far. Also, the "buffer zones" between the adjacent golf holes were much less, and the distance between the green and the next tee was just a short walk. Modern day golf courses often mandate golf car usage because of the longer distance between the greens and tees, which for some golfers detracts from the enjoyment of the game.

Figure 2.4 illustrates a double fairway golf course design. This layout also has variations for single, double and/or multiple adjacent golf holes, which is indicative of the early real estate related golf course designs. The golf course footprint is about 50% larger than the core design, from approximately 100 to 150-acres, in order to increase the number of premium priced fairway lots.

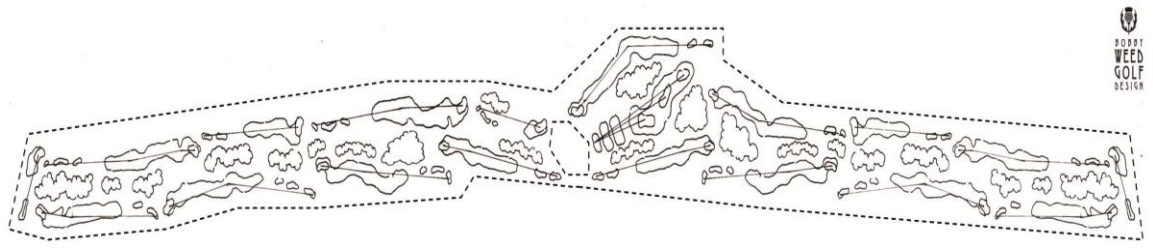

Figure 2.4: Real estate development golf course design for double adjacent holes.
Source: Bobby Weed Design

Real estate developers played an influential role in developing longer and more costly golf courses beginning in the 1980s and throughout the golf course development boom in the 1990s. The conventional wisdom was that golf courses that had "big name" architects and were famous for their difficulty commanded premium prices for their

fairway lots. Figure 2.5 has two illustrations of single fairway layouts, which maximized the number of premium priced golf course frontage because lots could be sold on both sides of the golf holes. Both designs increased the golf facility footprint to roughly 175 to 200-acres.The first design has “returning nines” (double loop) and the second has a “continuous 18-hole” (single loop) layout.

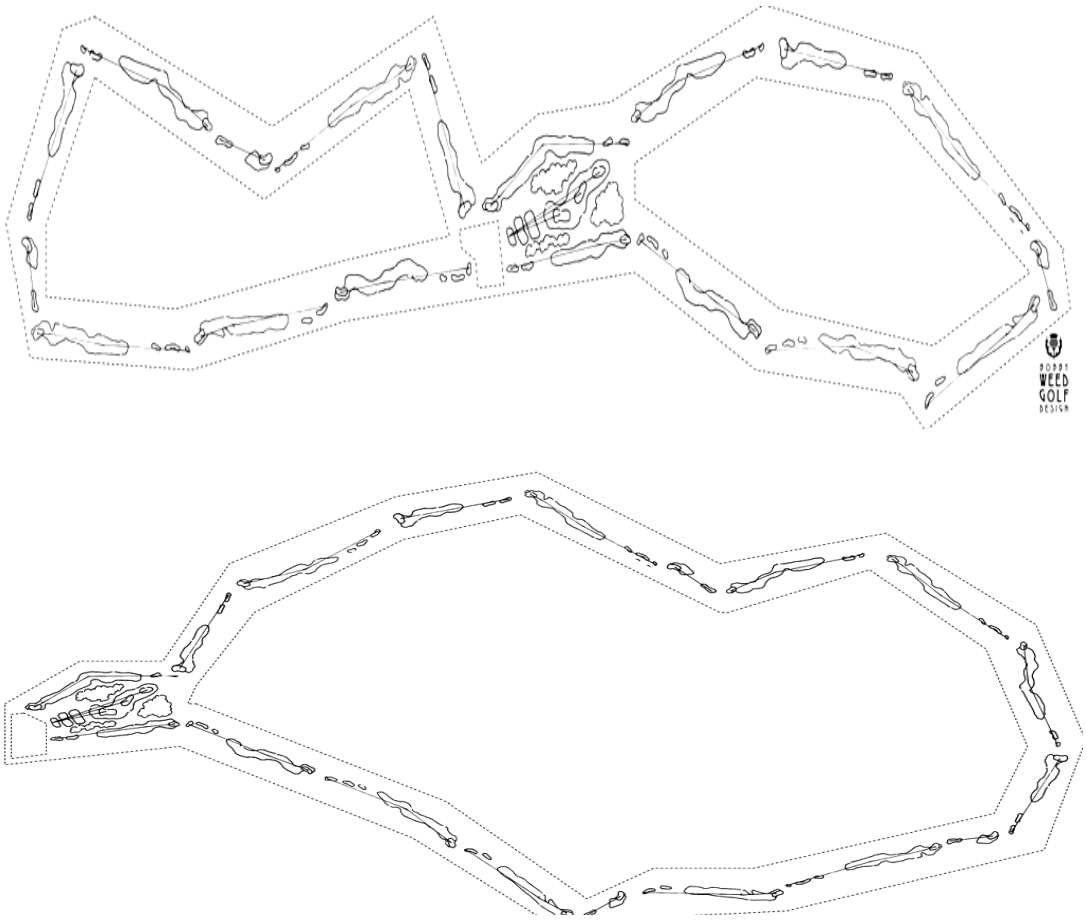

Figure 2.5: Real estate development golf course designs for returning nines (double loop), and for continuous 18-holes (single loop).

Source: Bobby Weed Design

The “retuning nines” design is more practical from a golf course operations standpoint, because golfers can choose to play nine or 18-holes and the golf course management could use both the first and 10th tee to maximize the number of tee times during prime golfing hours. For example, a golf course would have double the number of foursomes playing between 8:00 AM and 10:00 AM. There would be no tee times during 10:00 AM and noon, so the staff could be employed for other tasks such as marshaling the speed of play. With a single tee operation, the same number of golfers could play, but those golfers that started after 10:00 AM and through noontime would still be playing in the afternoon. With the double tee time system, the golf course is cleared and the number of available tee times for afternoon play is maximized. Therefore, the only reason to have a continuous 18-hole design would be to enlarge the size of the golf community footprint.

2.3. The Marriage of Golf and Real Estate

The marriage between real estate and golf course development was first consummated during the second boom period during the 1960s when it was estimated by NGF researchers that about 18% of the 380 golf courses built each year were a part of a real estate development. That percentage changed significantly during the 1990s boom period when according to the same NGF sources, more than 40% of the golf courses opened during the 1990s were associated with real estate developments.

Charles Fraser is credited as being the creator of the modern era of master planned golf course communities with the development of the Sea Pines Resort on Hilton Head, South Carolina. Fraser‘s Sea Pines is seven square miles, and what was of particular significance is that he was able to control “every aspect of the development from the

location of the streets and other infrastructure to the design of the individual homes" (Danielson, 1995, 1). In 1960, the first golf course on the island was opened. It was the Sea Pines Golf Course and the golf courses that followed, including the famed Harbor Town Links (home of the PGA Tour Heritage Classic) that really put Harbor Town on the map, and proved that golf courses would be a significant and successful means of enhancing interior property values (Danielson, 1995). The sea front property at Sea Pines Plantation was easier and more profitable to develop; however, Fraser wanted to attract more than just weekend and summer visitors, and viewed the integration of the golf course with the natural beauty of the forest as an environmentally and socially responsible way to maximize the value of the interior property.

Fraser's Sea Pines would become the golf course real estate development model for master planned communities across America for many decades. The use of land covenants and restrictions to regulate both the developers and property owners, ensured the maintenance of high quality standards, and this concept appealed to a higher demographic of prospective purchasers (Laing, 1997). These covenants addressed a myriad of quality standards from architectural designs, to construction materials, to the acceptable paint colors for homes and landscaping design and plantings. So, the innovation of using golf to sell interior real estate had a much broader application and appeal to prospective buyers including both golfers and non-golfers who all enjoyed this interaction with nature and the open green fairway vistas.

In fact, Nicholls and Crompton (2007) found that only 30% of the people living in master planned golf course communities actually play golf once a month and that the

value of a golf course view is dependent upon a myriad of factors not just the size of the lot. Do and Grudnitski (1995) pointed out that many non-golfer real estate buyers want to live in a golf development simply for the beauty of natural and unobstructed views.

The significant increase in the number of golf related "master planned community developments" signaled the greater role that real estate developers would play in determining the number and type of golf courses that would be built during the 1990s golf course development boom. As the U.S. economy was growing and the golf industry was booming, the blissful relationship between golf course and real estate development appeared to be a marriage made in heaven. Real estate developers believed that golf courses were a great amenity in selling real estate. "Big name" golf course architects were hired to design golf courses that were famous for their difficulty, because the conventional wisdom was that these types of golf courses enhanced real estate values, stimulated profitability and generated greater sales velocity.

The "big three" golf course designers during this time were Pete Dye, Tom Fazio and Jack Nicklaus. The golf course architects were somewhat at the mercy of the real estate developers who typically had the final say regarding the type of golf courses that they wanted in their communities. However, the golf course architects were not immune to the "bigger is better" attitude and they also had a vested interest in designing golf courses that might make their way onto the various national golf magazines "Top 100 Golf Courses Lists," because the top ranked golf courses that were famous for their difficulty were also longer and more costly to build. In addition, the architects' design fees escalated with their fame as a designer. The upscale golf community developments

had bigger golf course development budgets and could afford to employ the big name architects, who, in turn, had a vested interest in designing a golf course that would become famous for its difficulty and make its way onto the Top 100 listing. It was a self-fulfilling prophecy that the golf courses built during this era would continue getting more costly, longer and more difficult, simply because the developers and architects had a shared interest in that outcome.

For marketing purposes, the master plan community developers wanted their golf course to be more famous than the next. They believed that is what the real estate buyers wanted, who like the developers, were speculating on the escalating value of the real estate. The conventional wisdom among real estate developers, as reflected in the business literature of that time, supported the notion that famous golf courses that had a reputation for being very challenging to play generated premium real estate sales prices. Also, longer golf courses provided more golf course fairway lots, particularly when the golf holes were laid out in a single file fashion rather than being adjacent to one another to maximize golf course frontage lots that sold for a premium price over interior or non-golf course frontage lots.

This real estate marketing strategy was heralded in *Urban Land* articles such as: "The Changing Economies of Golf" and "Golf's Real Estate Value" (McElyear, et al., 1987 and 1991). Perhaps the best example of the golf industry's embrace of this marriage between golf and real estate was depicted in the Urban Land Institute (ULI) publication, *Golf Course Development and Real Estate*, in which Muirhead and Rando stated "Lots and houses in a golf course community bring higher premiums than comparable lots and

houses in a non-golf community." And, further, they said that "Historically, private golf course have created the highest premiums. Regardless of whether it is a private or daily fee operation, premiums for real estate are related directly to the quality of the golf courses as consumers perceive it" (Muirhead & Rando, 1994, 22).

There are many ways to attract attention other than just making the golf courses longer and more difficult. Pete Dye designed the Tournament Players Club (TPC), home of the PGA Tour's THE PLAYERS Championship. Below is a photo of the famous 17th hole that was taken during the third round of the tournament on May 12, 2012, with Ian Poulter and Rickie Fowler putting on the "Island Green.".

Figure 2.6: The 17th hole at the Sawgrass Tournament Players Club.
Photo Credit: Chris Condon/US PGA TOUR (May 12, 2012).

Scott Miller's design of the 14th hole at The Coeur d'Alene Golf & Spa Resort in Idaho, takes the TPC "Island Green" concept to the next level with the world's only floating green. As seen in Figure 2.7, the 15,000 square foot golf green complex is built upon a giant raft. A pulley system of cables moves the green, so that this unique par 3 hole can be played from various distances. The scorecard yardage is for the 14th hole to play 95 yards from the forward tees, 145 yards from the middle tees and 218 yards from the back tees.

Figure 2.7: The ominous 14th Par 3 at The Coeur d'Alene Resort, Idaho.

Since there can be no bridge to this moving island, Figure 2.8 shows how the golfers play the hole. After hitting their tee shots, the golfers board the "Putter Boat" and

are ferried back and forth. The Coeur d'Alene Golf & Spa Resort is located on the majestic Coeur d'Alene Lake and is considered to be one of the best resort golf courses in the United States.

Figure 2.8: The "Putter Boat" ferries golfers to the "Floating Green" and back.

Photo: Courtesy of Coeur d'Alene Resort. © 2012. All Rights Reserved. Photo by Joel Riner, Quicksilver Photography, Coeur d'Alene Idaho.

If novelty and notoriety can be tantamount to fame, and if famous golf courses command higher real estate premiums, then it is understandable the lengths that real estate developers might go to get attention and to differentiate their real estate development project. This marketing strategy also illustrates the role of the golf course as an amenity to attract attention and to enhance property values and real estate lot sales. Therefore, it could be surmised that the fame of the golf course and its accompanying

view as an amenity are more about selling premium priced real estate lots and less about providing a recreational amenity.

The proposition that golf course developers who used famous golf course architects such as Jack Nicklaus, Pete Dye or Tom Fazio had a significant positive impact on real estate prices is supported by studies such as Kauffman (2004) who found that the average sales price of a Nicklaus or Fazio home from 1993–2003 was $1.2 million, which was four times the price of a new American home built during the same time period. While it is difficult to compare one golf course real estate development with another, Kaufman (2004) also reported that other big name course architects had a similar positive impact on average golf course house prices (over $700,000) such as, Jay Morrish and Tom Weiskopf at $1.4 million; Pete Dye at $918,000 and Rees Jones at $711,000.

Ron Whitten, the golf course architecture critic for *Golf Digest* has been particularly harsh in his criticism of the modern era "championship quality" golf courses that were designed to be centerpieces for real estate developments, and that were created at "…the insistence by some owners on having the meanest, toughest, hardest golf course in all the land" (Whitten, 2007, 4).

The disparity between the pros and the amateurs has been accentuated with these technological improvements in golf equipment. At a press conference at the Atlanta Athletic Club during the 2011 PGA Championship, former PGA and two-time Masters Champion Phil Mickelson was critical of the golf course design changes made to the 7,467 yard par-70 Highlands course, "I think it's a great site for the PGA. But I also think if you look at the four par threes here, it's a perfect example of how modern architecture

is killing the game, because these holes are unplayable for the member. You have water in front and you have a bunker behind, and you give the player no avenue to run a shot up, and the seventh hole, where there is not any water; there's a big bunker in front and right of the green, instead of helping the player get it on to the green, it goes down into the lower area, as does the left side. Now, for us out here, it doesn't make a bit of difference, because we are going to fly the ball to the green either way. But it's a good reason why the number of rounds is down on this golf course amongst the membership. And it's a good reason why, in my opinion, this is a great example again of how modern architecture is killing the participation of the sport because the average guy just can't play it."[5]

Where this distance race is headed was revealed in a Golf Talk Central blog from Ryan Ballengee who reported in an interview with Tiger Woods on WJFK-FM that he expects to be playing and winning on the PGA Tour well into his 50s. Ballengee quoted Woods as saying, "It just has to be on the right golf course. By the time I'm at that age, some golf courses will be over 8,000 yards, so it's probably not going to be at one of those longer courses. It's probably going to be at a shorter golf course like you'd find at a British Open. You can certainly see a certain player playing into their 50s and being successful on a certain venue," he said. "You can't do it on all venues, there's no doubt. Some ballparks are just too big." [6]

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[5] Kevin Robbins, *Atlanta Journal Constitution,* report regarding Phil Mickelson's press conference during the PGA Championship on August 11, 2011.

[6]This blog appeared on May 23, 2012. Ballengee is a GolfChannel.com contributor who writes for GolfTalkCentral.

The irony in these comments was that the lengthening of golf courses were first spurred by the distance that Tiger Woods was hitting the golf ball when he first turned professional. In order to defend the integrity of the golf course, many golf courses on the PGA Tour felt that they needed to "Tiger Proof" their golf courses by making them longer. Woods sees this lengthening of the golf courses continuing to 8,000 and will choose to only play in those events where distance is not the deciding factor.

Meanwhile, the real victims of this distance race are the amateur golfers who are forced to play the same game on a golf course that has been designed to challenge pros with the latest technology and most expensive equipment. Unfortunately, average golfers, who comprise the vast majority of those who pay to play the game, are unable to take advantage of these technological advances; so, average golfers today are confronted with golf courses that are too long and too difficult to play.

According to the USGA handicapping service, the average handicap for golfers has not improved.[7] NGF/Synovate research findings report similar findings from their national survey panel. In other words, golfers are just as bad as they always were, as described by Pennington (2005). With the increased land needed to accommodate the longer golf courses, these courses were also more expensive to build, and are more expensive to operate and maintain. As Mulvihill succinctly stated, "…developers were

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[7] The USGA Handicap System™ enables golfers of all skill levels to compete on an equitable basis. The higher the handicap of a player, the poorer the player is relative to those with lower handicaps. USGA sanctioned handicaps are administered by state golf association and/or golf clubs, and that data is collected to determine the average handicap for U.S. golfers.

building golf courses that were too expensive, too difficult and too frustrating to play" (Mulvihill, 2001, 132).

To illustrate the lengths that real estate developers were willing to go for bragging rights as to the length and difficulty of their golf courses is The International "Pines" golf course in Bolton, Massachusetts that measures 8,325 yards and is a par 73. The USGA guideline for the maximum length for a par 5 hole is 691 yards. Figure 2.9, is a photograph of the 725 yard long 9th hole at The Gallery Golf Club in Marana, Arizona, which is the longest par 5 hole in the U.S. The longest hole on record is the 18th hole at Farmstead Golf Links that is 767 yards long and a par 6. Golfers actually tee off in South Carolina and cross the state line to putt out in North Carolina.

Figure 2.9: The 9th hole at the Gallery Golf Club is 725 yards long and the longest par 5 hole in the U.S.

While the length of a golf course is highly correlated to golf course difficulty in terms of the USGA Slope and Course Rating, there are some additional reasons why it made dollars and sense to build longer golf courses if the main interest was in selling golf view and frontage real estate lots. The often overlooked reason for making a golf course longer is that the developer can squeeze in more premium priced golf course lots surrounding a golf hole. For example, by adding 50 yards to a par four golf hole, the developer could theoretically add four 125 foot wide fairway lots. At $250,000 per fairway frontage lot that would represent $1.0 million in revenue compared to the substantially lower value for non-fairway frontage lots.

Since real estate developers considered the golf courses to be an amenity that increased the price of the real estate and increased sales turnover, it made business sense to subsidize the operating costs of the golf course in order to maximize the sales prices of the lots within the community. The real estate developers' primary interest was in selling real estate and not in operating the golf course as a going concern, because their project exit strategy was to dispose of the golf course once the real estate lots were sold. The problem with this business model was that many of the golf courses were not economically viable; therefore, when the economy soured the developers had a golf course asset that had become a liability. The developers' options were limited because they were required to continue to maintain the golf courses. They could either continue to subsidize the operation of the golf course, or sell the golf courses at a considerable loss. Depending upon how far along the real estate development was in its "sell-out" and the

availability of financing for real estate transactions of this type, neither option was very attractive for the developer.

So, what the golf industry has received in the final divorce settlement between golf and real estate development is a failed golf course real estate development model with little hope for any reconciliation between the parties. The offspring golf courses from this unholy union are not meeting the needs of the golf industry's ultimate consumers, which will have significant long-term business ramifications. Many of the golf courses are not economically viable and are either going out of business or just barely staying alive and hoping things will get better once the economy improves. Consequently, what the golf industry has inherited are golf courses that have too much debt, are too expensive to maintain and are not economically viable enterprises. Compounding this problem is that these golf courses are not affordable or fun for the average golfer and they take too long to play. Unknowingly, the real estate developers created a monster for themselves and the golf industry.

NGF research indicates that the golf industry peaked in the year 2000, as defined by the total number of golf courses, golfers and golf rounds played. By the turn of the century, the 1990s boom in golf course construction turned into a bust with declines in the number of golf courses built, as well as the beginnings of a downward trend in the number of golfers and golf rounds played (NGF, 2011a–2011d). This downturn in golf course development was principally driven by a series of adverse economic conditions that hurt the real estate industry and golf course development financing such as the Tech Stock Tumble in 2000, the 9/11 World Trade Center attack, the real estate bubble

bursting in 2007, the crisis in the financial markets in 2008 and the Great Recession that has ensued. As a result, lending has been stymied for golf community development and golf course acquisitions. Funding for the construction of new (non-real estate related) golf course projects was almost non-existent in the later 1990s, except for a few boutique lenders, such as Textron Financial,[8] which in 2008 also decided to exit the golf course mortgage and finance business and subsequently has taken back more than 30 nonperforming golf course loans. Funding could be secured for the financing of an existing golf course, even one that was only a marginally profitable operation, if the borrower had the financial capability to repay the loan. However, funding for a new golf course was not available, due to the uncertainty of the golf course projects' completion, regardless of the borrower's financial capability.

For example, in 2001 the only funding for a golf course that this researcher could secure for the development of Angeles National Golf Club (a "Nicklaus Design," high-end, public golf course) was a $10 million "Take Out" loan from Textron Financial. This loan was provided in stages and only after the developer had fully funded the project that included the purchase of the land and the construction of both the golf course and clubhouse. In effect, this was no more than a secured line of credit, not golf course construction and development financing, which was basically a no risk loan for the lender.

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[8] In December of 2008, Textron Financial Corporation announced plans to exit all of its commercial finance businesses, other than that portion of the business supporting the financing of customer purchases of products manufactured by its parent company, Textron Inc. This included the sale of their golf course mortgages of products manufactured by its parent company, Textron Inc. This included the sale of their golf course mortgages (Source: http://www.textronfinancial.com/StratDecision.shtml).

When golf community development was booming, it had been common practice for developers to subsidize the golf course operations, because their primary interest was to sell the real estate surrounding the golf course. In the early to mid-1990s, there were a number of foreign and domestic golf course buyers, especially with the availability of Real Estate Investment Trust (REIT) financing. Golf course management companies such as Club Corporation of America and National Golf Properties were building their portfolio of owned and managed golf courses. That quickly changed with the turn of the century and the downturn in the economy and real estate business.

Since the value of a golf course as a business is some multiple of expected earnings, and once it became evident that the golf courses were not profitable enterprises, there were very few buyers for these golf courses. From the standpoint of the real estate developer, these golf courses went from being an asset to becoming a liability. In some cases, there were no buyers for the golf facilities. The club members were asked to acquire the nonperforming asset and they sometimes refused, so the developer was obliged to continue funding the deficit golf club operation. As the value of existing golf courses declined, it became increasingly difficult for the real estate developers to dispose of their golf course properties once they had sold most of the residential real estate. As a result, lenders were cautious about providing funds for the acquisition of those golf courses.

Financing for real estate development was very tight due to the bad economy and market uncertainty. Real estate buyers no longer saw real estate as a “can’t miss” investment opportunity. Speculation no longer drove real estate sales, because buyers

were looking for value and utility as opposed to making a capital gain on their real estate investment. The golf industry's new business reality was that it could no longer dance with the girl that it brought to the party.

2.4 Impact of Golf on Real Estate

The conventional wisdom and rationale for the golf course/real estate business model was validated in the trade journals at the time, particularly, in the ULI publications. There was not much academic scrutiny that challenged these a priori marketing assumptions and business strategy. However, with the Great Recession it has become evident that the presumption that real estate was a "can't lose" proposition was proven wrong. Real estate values and lot sales plunged in 2007, which foreshadowed the financial crisis in the fall of 2008 when the nation's attention was on rescuing Wall Street. Both the developers and real estate speculators alike were caught "red-handed." The billion dollar question for the golf industry today is whether or not the real estate developers' infatuation with golf can be rekindled once the divorce decree has been made final.

The answer is that "it depends." While the intrinsic appeal of having a golf course in one's backyard will remain, as noted by Do and Grudnitski (1997) and later described by Laing as, "…privacy, beguiling views of greenery that homeowners don't have to maintain and, for homes [along] the fairways, assurance that no further development will obstruct that view" (Laing, 1997, G6); the question remains as to what the value of a golf course and view are compared to other amenities and views offered in the marketing of a master planned community.

So, how is this intrinsic appeal quantified? Historically, the developers quantified this value in the premium price that they charged for being on the golf course and/or just being in a master planned community that featured golf as a primary amenity. Their pricing strategy reflected their assessment of the prices that other developers charged for similar properties. While anecdotal in nature, this approach was practical in its application since it employed the conventional approach used within the real estate profession to estimate values based upon comparable sales/prices to determine what the market might pay for a subject property.

A more sophisticated approach in making these real estate valuations would employ the use of a hedonic pricing model to analyze golf course property premiums. Seven hedonic pricing studies were examined and include: Do and Grudnitski, 1995; Asabere and Huffman, 1996; Grudnitski and Do, 1997; Grudnitski, 2003; Nicholls and Crompton, 2007; Shultz and Schmitz, 2009; and, Wyman and Sperry, 2010. Additionally, there have been a number of studies that have considered golf course frontage (interior) lots as dependent variables in wider hedonic models, but for the purposes of this analysis, the focus is golf course real estate.

The two Do and Grudnitski studies did not find significant premiums for golf course lots compared to non-golf course lots. Their first study in 1995 focused on sales transactions from February 1990 through July 1993, on three golf courses in Rancho Bernardo (San Diego, California) and determined that there was only a premium of 8% for being on the golf course. There is speculation that this finding may be due in part to their matched pair research design methodology, but no explanation was offered in the

study. In the second study of the same Rancho Bernardo area, Grudnitski and Do (1997) utilized a similar research design methodology, but had a smaller sample size. They found a smaller premium of 5% for golf course lots compared to lots not located on the golf course. While this small premium for golf course frontage flies in the face of the conventional wisdom at the time, it does find that there is a premium paid for a golf course lot.

The question is why is this price premium less than expected? Is this due to the research methodology in using matched pairs? Some researchers believe that it is difficult to identify perfect matches without making significant adjustments (Chalmers & Voorvaart, 2009), and sometimes analysts will simply vary in how they select the pairs in the same dataset. Therefore, it is possible that another researcher and/or methodology could yield a different result. Also, it is possible that the real estate developers' pricing strategy could have dictated these unexpected smaller price differentials, and/or the type and/or quality of the golf courses may have a role in determining the lower than anticipated premiums for golf course frontage. Two of the golf courses were private, two were open to the public and one was an executive length (shorter yardage) golf course. None of the golf courses had a big name designer and/or were ranked in the top 40% among San Diego market area golf courses, which may have also been a factor in the smaller than expected golf course price premium.

Asabere and Huffman (1996) expected to see higher premiums for golf course frontage lots in their hedonic pricing study. They found similar results to the Do and Grudnitski's studies that had a golf frontage lot premium of only 8%. Other similarities

included the small sample size and the lower quality golf course. The subject golf course, Ramblewood, was given a three star rating (average) in 2007 by *Golf Digest* magazine (Golf Digest, 2007, January).

Interestingly, the economic impact seems to be less for lower-end versus higher-end golf course real estate developments. Asabere and Huffman (1996) found a relatively low price premium of 8% for homes adjacent to the lower rated Ramblewood golf course, which was markedly lower compared to Nicholls and Crompton (2007) findings of a much higher sales price premium (26%) for homes along Pebble Creek, a more upscale private golf course. These two studies validate that it was reasonable for the real estate developers and practitioners to make the assumption that if they spent the money for a higher quality golf course they could command a higher premium for their lots.

While Asabere and Huffman did find a measurable premium for golf course frontage lots, their research provided the first major empirical evidence for both positive and negative impacts for golf course proximity on home values. This has some important implications for appraisers regarding some mitigating factors that could offset the value of golf course real estate such as the proximity of the real estate lot to the gate, the golf course design, lot set-backs (distance) from the golf course, natural buffers, aesthetics and safety issues (errant shots from golfers). The significance of this research is that these impacts had not been tested empirically.

Later studies by Grudnitski (2003), Nicholls and Crompton (2007), and Shultz and Schmitz (2009) found higher price premiums for golf course real estate lots. This later Grudnitski study has a larger sample size (2,311 sales transactions) and the

researchers compared the sales transactions for both golf and non-golf Las Vegas communities. Their study examined sales from 1998 to 2001 and found a 12% premium for homes on a private golf course compared to a 6% premium for homes on a public golf course over homes that were not in a golf course community. The presumption is that a home on a private golf course is of a higher quality, more prestigious and better maintained.

The hedonic study conducted by Nicholls and Crompton (2007) examined the sales transactions of 305 properties over a comparable time period (1997–2001) with the Grudnitski study. While the latter study was conducted in the hot Las Vegas real estate market, compared to the less than sizzling (other than the temperature) of the College Station, Texas market, the results were markedly different. The Nicholls and Crompton research focused on Pebble Creek, an upscale master planned golf course community on the outskirts of College Station, Texas. These researchers found a price premium of 26% for homes located adjacent to the golf course compared to similar, non-adjacent properties in the same community. In this study, the authors were able to control for outside externalities such as: proximity to community attractions, amenities and services; school districts; security; etc. In addition, Nicholls and Crompton found that home prices decreased by about $940 for every 100 feet increment in distance from the entrance to the club. These results suggest that there is a premium for access to amenities within a community. They concluded that more prestigious master planned community projects like Pebble Creek tend to have higher premiums than residential real estate built along lower quality golf courses.

The Shultz and Schmitz (2009) hedonic study examined 5,782 single home sales that occurred within half a mile of 20 golf courses in Omaha, Nebraska, from 2000 to 2006. These researchers found a 15% average price premium for properties with golf course frontage. The premium was higher for private courses (23%) and lower for public golf courses (13%). These findings support both Grudnitski's (2003) findings for price differentials between private versus public golf courses, and Nicholls and Compton's (2007) findings regarding higher premiums for more prestigious and higher quality golf courses.

Wyman's and Sperry's (2011) spatial hedonic study identified pricing differentials for golf course views versus an array of other lot types within the same master planned community. Wyman's (2011) recently completed study focused on pricing of lots before, during and after the economic and real estate market downturn in 2006. He introduced four new spatial variables into the pricing of real estate pertaining to the siting and four different views, golf course, lake, mountain, and lakefront. His work revealed a hierarchy in the pricing for each with the highest view premiums for waterfront properties. The results indicated a pricing premium ranging from 42% to 54% for golf course views, 94% to 133% for lake views, and 131% to 305% for lakefront lots. Other statistically significant variables he found to influence the price of a lot included the slope of a lot, length of shoreline, and proximity to the lakeside village.

In summary, the Do and Grudnitski (1995) and the Asabere and Huffman (1996) hedonic pricing studies found that there is a premium for golf course frontage lots with the amount varying by type of development as well as the location of the lot within the

subdivision ranging from 5% to 8%. Subsequent studies by Grudnitski (2003) Nicholls and Crompton (2007), and Shultz and Schmitz (2009) tended to find higher price premiums. Grudnitski found a 12% premium for golf frontage lots at private golf course and a 6% premium for golf frontage lots at public golf courses. Nicholls and Compton's research revealed that there was a 26% price differential for homes located on the golf course compared to similar homes in the same upscale master planned community.

The Shultz and Schmitz (2009) found a 15% average price premium for properties with a golf course frontage; however, the premium was higher for private courses (23%) and lower for public golf courses (13%), which supports both Grudnitski's (2003) findings for price differentials between private versus public golf courses, and Nicholls and Compton's (2007) findings regarding higher premiums for more prestigious and higher quality golf courses. Wyman's (2011) research has important implications and applications for golf community redevelopment and future golf community development, because the price premium for water versus golf views/frontage were substantially higher, ranging from 94% to 133% for lake views, and 131% to 305% for lakefront lots.

2.5 Situational Analysis

The NGF Golf Business Update (2010) report stated that since 2000, the golf industry has experienced significant declines in all of the key barometers of the golf industry's economic health and vitality, which include: the number of golfers; the number of golf rounds; and, the net increase (decrease) in the number of golf courses. While the percentage of the Baby Boomer population segment that plays golf has remained the

same, NGF research revealed that the percentage of the overall population that played golf has declined over the past 20 years.

In 1990, the percentage of the population that played golf was 12%, by 2000 it was 11% and by 2010 it was down to 10%. Figure 2.10 profiles this change in the estimated number of golfers from 19.7 million in 1986, to its peak of 30.6 million in 2003, to 25.7 million in 2011.

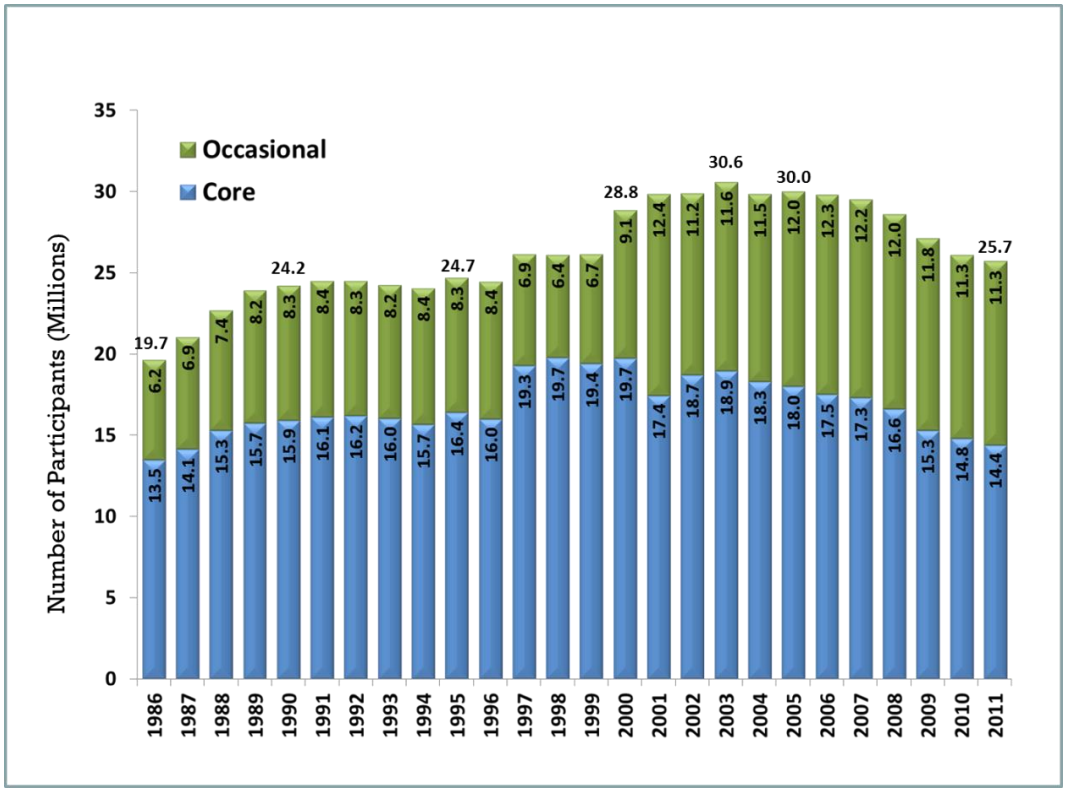

Figure 2.10: Golfer population trends 1986-2011
Source: NGF golf participation study (2011)

Figure 2.11 reveals how the decline in the NGF estimate of the number of golfers from 30 million in 2005 to 25.7 million in 2011 may have foreshowed the downturn of

other indicators of the economic vitality of the golf industry. Of note is the change in the mix of "Core" versus "Occasional" golfers over the past five years, which shows a 3.6 million or 18% decrease in the number of core golfers. This decline in the number of core golfers is significant because these golfers play more often and spend more on golf. The decrease in the number of occasional golfers during this same timeframe was 2%, which is of lesser consequence because the golfers in this category regularly turnover and are replaced by other golfers who typically only play a round or two of golf.

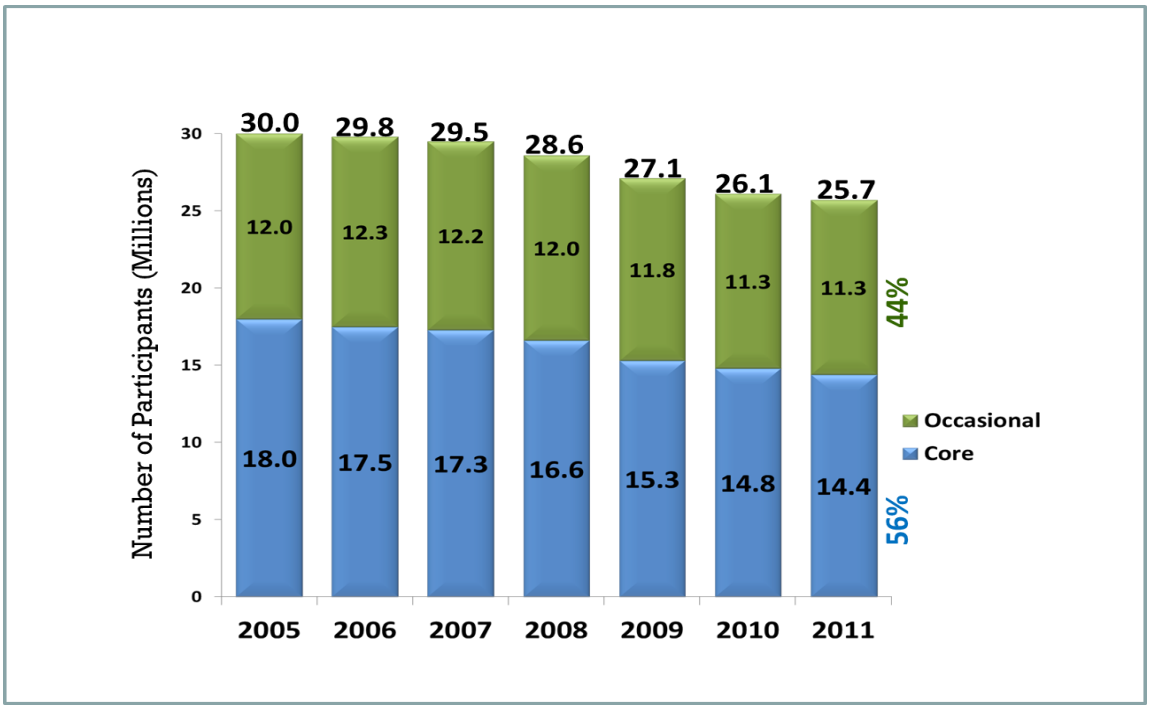

Figure 2.11: Golfer population trends (Occasional vs. Core) 2005-2011
Source: NGF golf participation study (2011)

Obviously, there is a relationship between the number of golfers and the number of rounds played. While it is theoretically possible to have an increase in the number of

golfers and a decrease in the rounds played, more often than not, if there is a decrease in the number of participants there is a corresponding decrease in the number of rounds played. Figure 2.12 shows how the decrease in the number of golfers between 2005 and 2011 correlates with the decline in the golfing population as the total estimated number of rounds played went from 500 million in 2005 to 463 million in 2011, which is a decrease of 7% and suggests some tie in the decline in golf participation to the downturn in the U.S. economy.

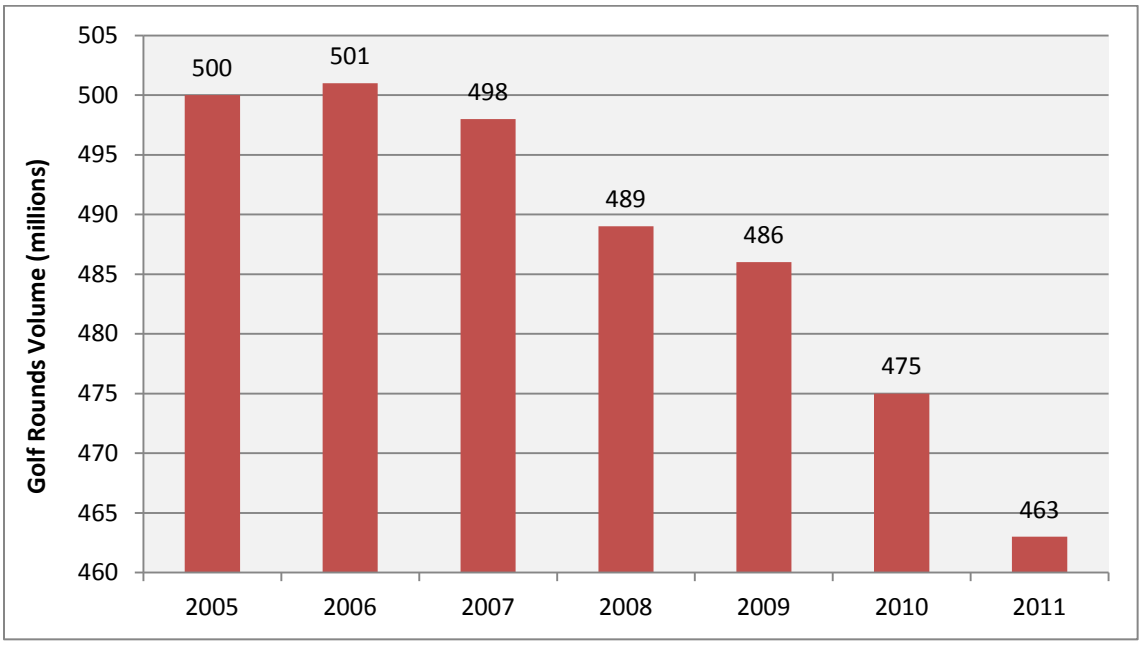

Figure 2.12: U.S. golf rounds played, 2005-2011
Source: NGF, Golf Datatech

With a decrease in demand as reflected by the decrease in the number of golfers and rounds played, there is an adverse impact upon the supply of golf facilities. Figure 2.13 illustrates the number of golf course openings (18-hole equivalents from 1985

through 2011). The rise in the number of golf course openings during the 1990s is quite evident, as is the decline in the number of new golf courses built during the next decade when the number of golf course openings went from a peak of 399 (18-hole equivalent golf courses) in 2000, to 19 in 2011.

In Figure 2.13, the downward trend in golf course openings since 2000 is bleaker when the increasing number of golf course closures is overlaid onto the decline in golf course openings. The golf industry is in the midst of a major crisis in the economic viability of its built environment. NGF research reveals that there have been over 1,000 golf course closures since 2000, ranging from a low of 32 in 2001 to a high of 158 in 2011. From 2006 through 2011 a total of 778 courses were closed for an average of 130 per year over six years (Figure 2.14).

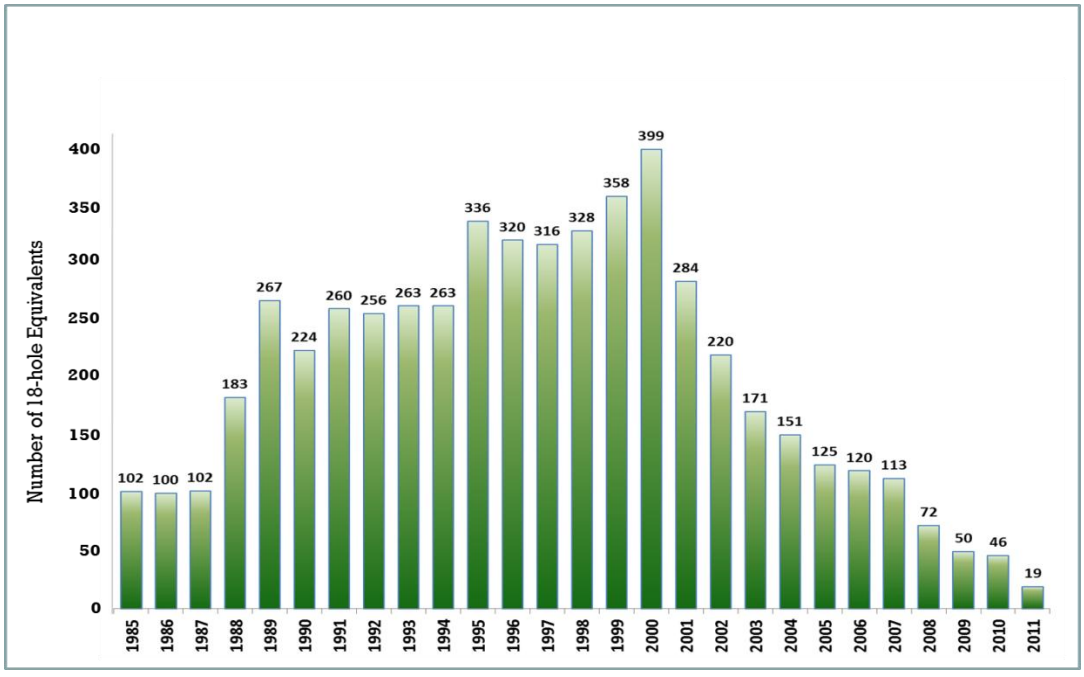

Figure 2.13: Golf course openings, 1985-2011
Source: NGF Golf Facility Tracking (2011)

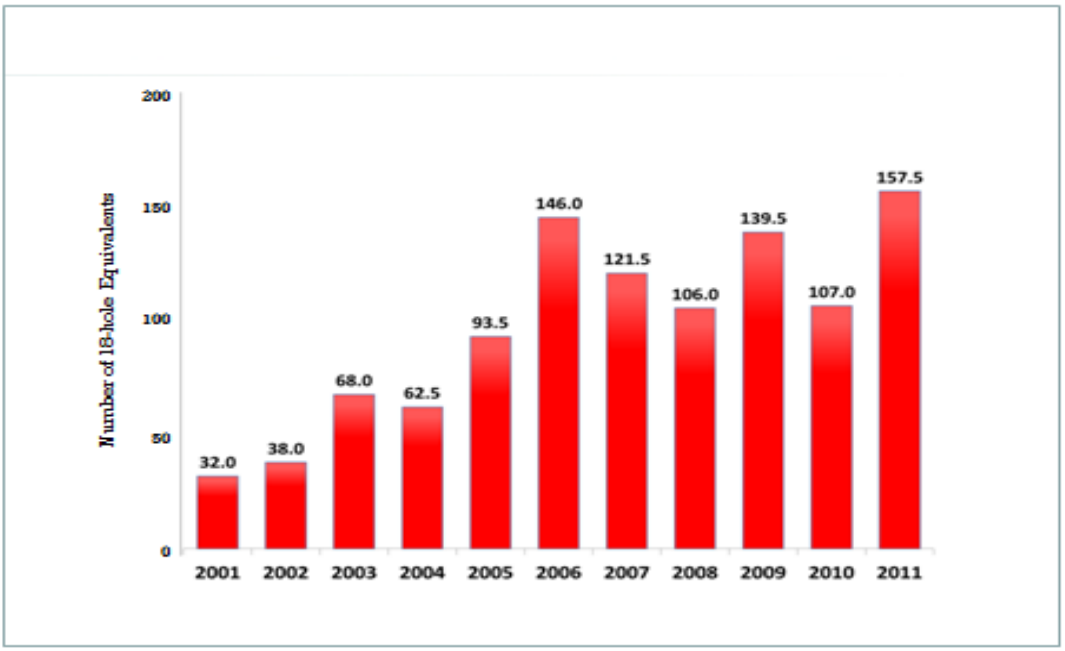

Figure 2.14: Golf course closures, 2001–2011
Source: NGF Golf Facility Tracking (2011)

Figure 2.15 illustrates how the "Net Growth" (number of golf course openings versus closings) has been negative over the past six years, a trend that has not occurred since the Great Depression (Beditz & Kass, 2010). In 2006, there were 146 golf courses (18-hole equivalent golf courses) that closed compared to 120 golf course openings, which is a net loss of 26.5 golf courses. In 2007, there was a slight improvement with a net loss of 8.5 golf courses; however, the downward trend continued with net losses of 34 in 2008, 90 in 2009, 61 in 2010 and 138.5 in 2011.

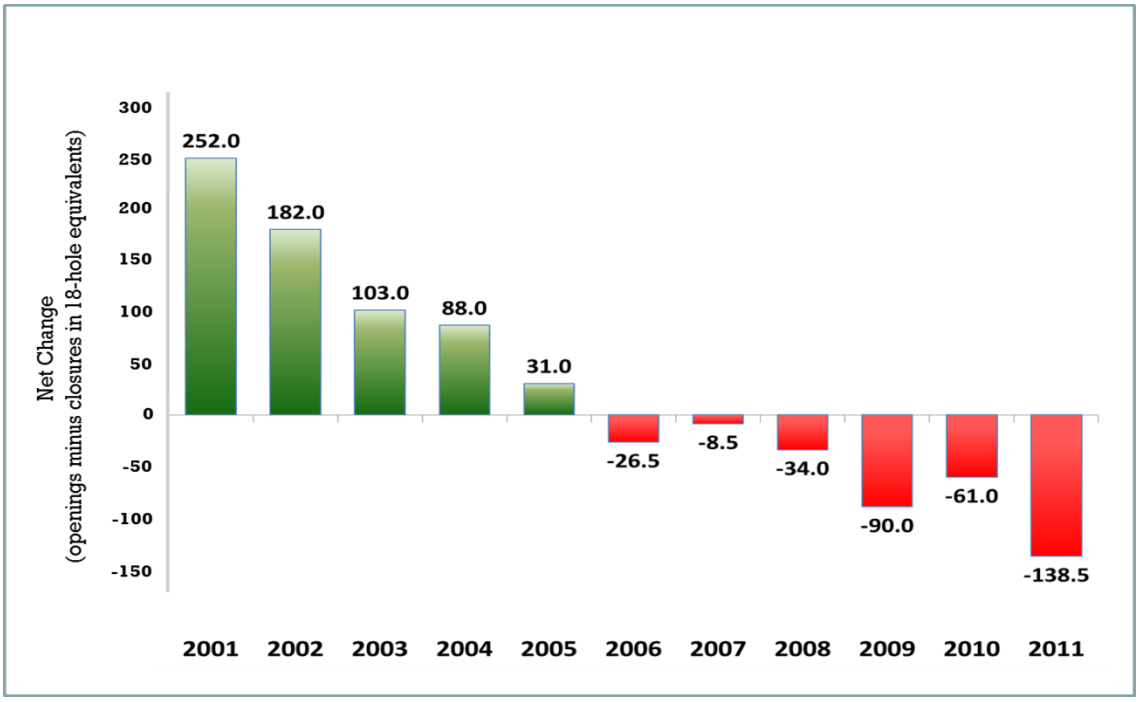

Figure 2.15: Net change in the golf course supply
Source: NGF Golf Facility Tracking (2011).

During the 1990s, the supply of golf courses increased 21%, and the demand for golf, or rounds played, increased by 15%. During the first 10-years of the 2000s, there has been an unhealthy imbalance between supply and demand. In the years 2001 through 2005, the decreasing net increase in the number of golf courses reflected the saturation of supply, which was exacerbated by the downturn in the U.S. economy in 2006 through 2011, where there was a net decrease in the supply of golf courses. The impact of having excess supply and less demand can be translated into a lower average number of golf rounds on a per golf course basis. According to the NGF, the number of rounds played per 18-hole equivalent golf course has decreased by 14% from 36,333 in 2000, to 31,299 in 2011, as detailed in Figure 2.16.

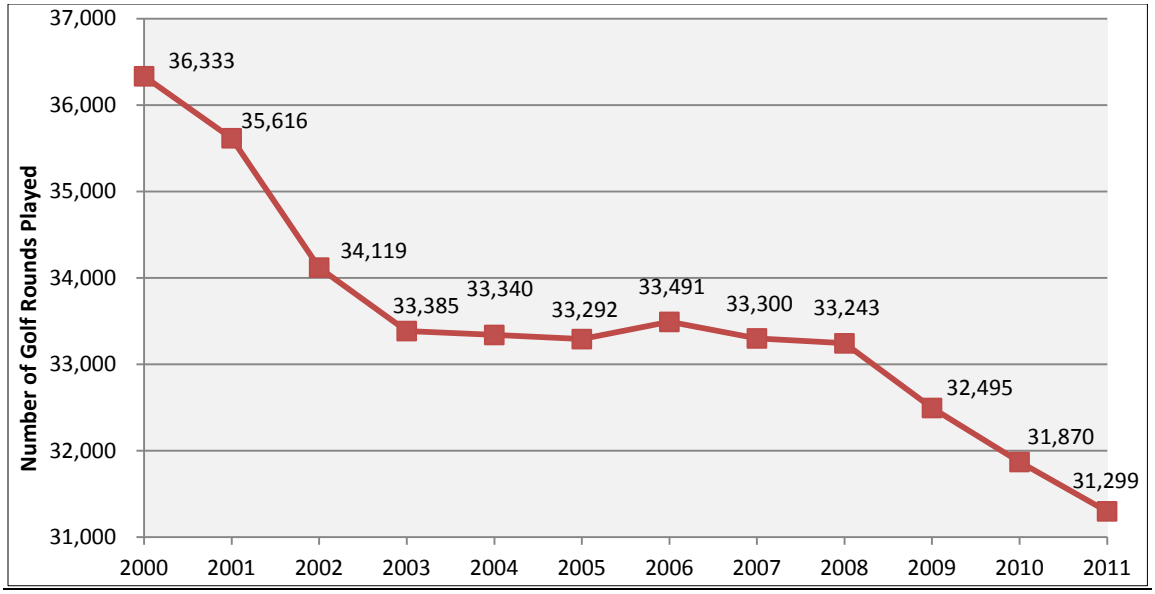

Figure 2.16: Golf rounds per golf course, 2000-2011
Source: NGF, Golf Datatech.

The impact of having excess supply and less demand can be translated into a lower average number of golf rounds on a per golf course basis. The NGF surveyed 330 operators of private golf courses and 1,750 operators of public golf courses and reported that 15% of both types of golf courses said that they were having severe financial difficulty. Memberships at those "at-risk" private clubs were down nearly 30% and rounds played were down 22% (NGF, 2008a, 2008b, 2008c and 2009).

According to a presentation made by Beditz, NGF president and CEO, at a Clemson University conference, Golf S.O.S: Symposium on Sustainability, "The downward trend in golf participation and the contraction in the golf course supply will continue for another five to seven years depending upon the timing of the economic recovery; however, adjustments such as this are not necessarily bad or unusual when

there is an imbalance in supply and demand. For example, no one thought a couple of years ago that Starbucks was going out of business when they closed a number of outlets. They had too many stores and the market conditions had changed. The same is true for golf."[9] However, this spin on a serious downturn in supply may be overly optimistic.

Some in the golf industry believe that this problem will fix itself over time, and the marketplace will naturally adjust for this imbalance in supply and demand once the industry loses another 1,500 to 2,000 golf courses. However, this assumes that demand for golf, as measured by the total number of rounds played remains the same while the number of golf courses, the percentage of the population that plays golf and the number of rounds played have decreased. It is evident that the current problems plaguing the golf business are more than just having too many golf courses and too few rounds of play.

It is evident that a significant proportion of the U.S. inventory of golf courses is not economically sustainable in its current form, and cannot be sustainable until these issues are better understood, diagnosed and addressed. The question is whether the paradigm change in the nature and type of golf courses built during the 1990s may have exacerbated the imbalance in demand and supply. The underlying theme of Drucker's seminal marketing management book was that the purpose of a business is to create customers (Drucker, 1954). Unknowingly, the opposite may have occurred in the golf industry with the proliferation of golf courses that were too costly, too difficult and took too long for the average golfer to play. The golf course development boom in the 1990s was driven by real estate development, which indirectly may have facilitated the

[9] See the Clemson University press release for Golf S.O.S. Symposium on Sustainability in Appendix F.

development of golf courses that are not economically viable, because they do not create customers.

Why are golfers playing less often? Since 1986, the NGF has conducted a large-scale survey of 20,000 Americans regarding golf participation via samples drawn from a Synovate Inc. panel comprised of over two million people. One of the research findings from this annual study has repeatedly confirmed that the top three barriers to golf participation from the consumers' perspective are the cost of playing golf, the golf courses are too difficult and it takes too long to play a round of golf (Figure 2.17).

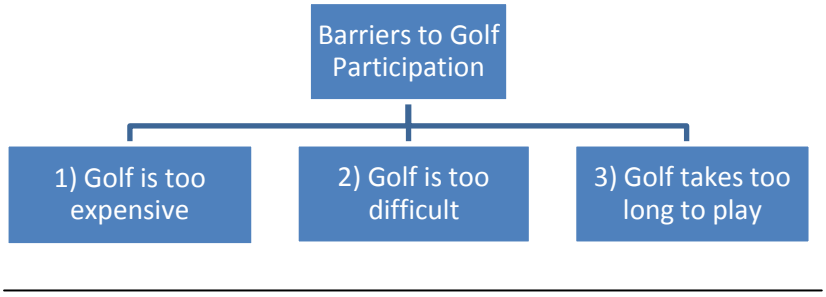

Figure 2.17: Barriers to golf participation
Source: NGF/Synovate Golf Participation Research (1989-2011).

The literature and the researcher's anecdotal assessment suggest the following explanation as to why demand for golf has been declining.

Golf Is Too Expensive

In the 1990s, the golf course development business model changed with the explosive growth in the number of golf courses tied to residential real estate development and golf course construction costs soared. There is no definitive data available and no

reliable means of obtaining it; however, golf course architect, Tom Fazio, has offered his best estimates for inflation adjusted golf course construction costs on a per hole and 18-hole basis (Fazio and Brown, 2000, A-i). Table 2.1 provides the cost ranges for those construction costs for the 1960s, 1970s, 1980s and 1990s.

Table 2.1: Golf Course Construction Costs

Cost per Golf Hole			
1960s	1970s	1980s	1990s
$10,000– 20,000	$30,000– 60,000	$70,000– 200,000	$200,000– 400,000
Cost per 18 Holes			
1960s	1970s	1980s	1990s
$190,000– 380,000	$540,000– 1.08M	$2.0– 4.0M	$3.8– 7.6M

Source: Fazio & Brown (2000, *A-i*)

Based upon these estimates, the golf courses that were built in the 1990s were significantly more expensive to construct than the golf courses built in the previous three decades. The golf courses built in the 1990s were also longer and more expensive to maintain due to the increased acreage as well as more sophisticated golf course maintenance practices that required more manpower and expensive equipment. For example, the typical golf course maintenance crew in the 1960s might have four to eight workers and use tractor pulled seven to nine gang mowers to cut the fairways, compared to a crew in the 1990s that might have15 to 40 workers using triplex (three gang) mowers. Table 2.2 reflects the higher design, construction and annual golf course maintenance costs for the golf courses built in the 1990s, which instituted a more costly

standard for all golf courses and led to the increased price to play golf that is reflected in the NGF Golf Facility Database cost data.

Table 2.2: Annual Golf Course Maintenance Costs

Cost per 18-Holes			
1960s	1970s	1980s	1990s
$50,000–100,000	$150,000–300,000	$300,000–850,000	$750,000–1,200,000

Source: Fazio & Brown (2000, *A-i*)

The perception among golfers and non-golfers that golf is an expensive game to play adversely impacts golf participation and rounds played. This is especially true during the most recent years when there has been a decline in median income leaving Americans with less disposable income for recreational activities like golf. Leonhardt (2009) reported that household income declined (adjusted for inflation) from 1998 to 2008. In 1998, the median income was $51,295; in 2008, the, median household income was $50,303 in 2008.

Research from the Sporting Goods Manufacturing Associations (SGMA, 2009a, 2009b) also has found that the increasing cost of playing golf may have been a factor in the decline of demand. They found that recreational activities that cost less, such as walking, jogging, swimming, etc., have enjoyed increased participation compared to golf. If the price is too high, golfers will play less often (Lynch, 2007).

Golf Courses are Too Difficult

Real estate developers hired famous golf course architects to design golf courses that were infamous for their difficulty, because they believed that this marketing strategy enabled them to sell real estate at premium prices. This resulted in the development of golf courses that were too difficult for average golfers, who are the vast majority of the consumers for the golf courses.

Making matters worse, many golf courses have been made even more challenging by the golf course maintenance practices that have heavy roughs, narrow fairways, firm and fast greens. While these golf courses may test the skills of the professional golfers, amateur golfers who actually pay to play the game are left out of the equation. This does not make any business sense. For example, it is not unusual for the rough areas to be mowed so high that the golfers cannot find their golf ball, and if they can find it, the rough is so thick that they cannot extricate the golf ball for their next shot. Unfortunately, golfers often spend too much time looking for golf balls and have trouble just finishing a hole.

Golf Takes Too Long to Play

While the cost and the difficulty of playing the game are obvious impediments to the appeal of the game, the time that it takes to play the game has been noted by golfers and non-golfers alike as a reason why they don't play as often or don't play at all. It is not just the time that it takes to play the game; it is the four to five hours that it takes away from other activities such as family, work and other social activities, many of which are more affordable than playing golf. And, during an economic downturn, there is even

less time for recreational activities. Nearly 60 percent of two-working-parent couples with children had at least one parent who worked some combination of weekends, evenings and nights. Fixing school lunches, taking care of domestic duties, transporting kids to child care and/or soccer games plus having a second job to make ends meet, just does not leave much time for a four hour round of golf (Presser, 2004).

The time that it takes a foursome to play a round of golf is also an important financial consideration for the golf course operator. The difference between a four and five hour round of golf could translate into eight additional rounds of golf per hour, which over the course of eight hours of tee times equals 64 more rounds of capacity. If golfers can play a round of golf in four instead of five hours, there will be enough time for two more foursomes per hour to play during daylight hours. Assuming a $40 greens fee and eight-hours of tee times, there would be a theoretical revenue increase of $2,560 for a typical public golf course on a busy Saturday in May.[10]

The cost of playing a round of golf, the difficulty of the golf courses and the time that it takes to play a round of golf are all critical variables that will impact the demand for the game as measured in terms of the number of golf rounds played. A skiing analogy is useful in making this point. Imagine every skier is required to buy a $150 lift ticket and is only allowed to use the black diamond run; but, according to their ability, age or sex, they are allowed to start farther down the hill although the moguls and difficulty of the run is constant for the whole hill. Golf's version of this practice is to offer golfers the

[10] According to the NGF, the national average greens fee is $41 (NGF Golf Course Facility Database). The math is $160 per foursome times 16 tee times, which totals $2,560.

opportunity to play a golf course from various tee locations (Championship tees, Back tees, Member tees, Senior and Family/Ladies tees), which supposedly make the golf course play the same for golfers of various skill levels. However, the golfers will still have to ski the remaining portion of the black diamond run.

This does not make any sense for skiing and it does not make any more sense for golf. However, this researcher believes that this is the product that golf course real estate developers and golf course architects created in the 1990s, and this is the product that the golf industry is selling to its customers, as if one size fits all. The problem is that golfers are not buying the product (defined in terms of rounds played) at sufficient levels to support the economic viability of the current supply of golf courses.

2.6 Summary

Each boom period led to the development of categories and types of golf courses that can be defined in terms of their intended customers, and led to the development of golf courses that had many of the same physical characteristics. The first boom built core golf courses that were essentially an amenity for the private country clubs. The second boom in golf course development built public golf courses, including municipal golf courses to meet the recreational needs of the burgeoning middle class, as well as building private golf courses that were used as the lead amenity in selling real estate lots. The third boom in golf course development was intended to meet the anticipated latent demand from the Baby Boomers that were entering the prime of their working lives or were on the verge of retiring.

Since 40% of the golf courses built in the 1990s were real estate related, the developers played a dominate role in the development of golf courses; it is theorized in this research that these developers built golf courses that were intended to enhance real estate values and to profitably sell real estate. The unintended consequence of this marketing strategy is that the nature and type of golf courses built during this era were too costly, too long, too difficult and time consuming for the average golfer to play, which has resulted in the development of golf courses that do not meet the needs of the golf industry's ultimate consumers. Consequently, the golf industry has inherited a large inventory of golf courses that are unsustainable in their current form and in how they are maintained and managed.

No one has ever studied or analyzed how golf's built environment has reflected the changing face of the game and the golf course business. The literature review and research analysis has identified the driving forces that defined and shaped the three golf course development boom periods in the 20th century, as well as provided insight into understanding the challenges confronting the health and economic vitality of the golf industry.

CHAPTER THREE

RESEARCH DESIGN AND METHODS

3.1 Introduction

Singleton and Straits define the "Research design as the overall plan of an empirical study including the basic approach, sampling design, and measurement of key variables" (Singleton & Straits, 2005, 570). As such, the research design is the blueprint for the collection and analysis of data to answer the research questions and to test the hypotheses. Creswell expands upon that definition of research design in stating that "I use this term to refer to the entire process of research, from conceptualizing a problem to writing a narrative, not simply the methods such as data collection, analysis, and report writing" (Creswell, 2007, 249). And, Yin succinctly synthesizes these definitions into everyday terms in saying that "… a research design is a logical plan for getting from here to there, where here may be defined as the initial set of questions to be answered, and there is some set of conclusions (answers) about these questions. Between "here" and "there" may be found a number of major steps, including the collection and analysis of relevant data" (Yin, 2009, 26).

The research design described herein is for a "descriptive" study using mixed methods to test the hypothesis that "The nature and type of courses built (or renovated) during the 1990s development boom were longer, more difficult and more expensive to play compared to the golf courses built during the previous golf course development boom periods in the 1920s and 1960s." If this hypothesis is confirmed, it will argue that

this paradigm change in golf's built environment may have played a role in the decline of golf participation and contributed to the economic duress in the golf course business.

Section 3.2 focuses on the descriptive statistics for the variables of interest that are taken from the NGF Golf Facility Database as well as from the NGF *Pace of Play* survey that was conducted in March of 2012. A univariate analysis of this secondary data was undertaken to provide a depth and breadth of understanding regarding the group means across the decades of interest. The ANOVA is used to test the hypothesis that the key variables of interest that characterized golf's built environment during the three golf course development booms in the 20th century had changed over time.

Section 3.3 is a qualitative study that was undertaken to augment the literature review findings and to explain how and why the change in the nature and type of golf courses built in the 1990s had occurred. In-depth expert interviews were conducted with prominent real estate developers and golf course architects, which provided additional insight and understanding regarding the research questions.

3.2 Quantitative Analysis: NGF Data

The NGF Golf Facility Database is an actual census and contains descriptive data regarding the cost, length and difficulty variables of interest, but does not have information regarding the time to play a round of golf, and whether or not there were any renovations to make the golf courses more costly, longer and/or more difficult to play. Therefore, the NGF conducted an online survey, the NGF *Pace of Play* study, which was completed in March of 2012.

The NGF data to be analyzed will include: when the golf course was opened; the number of golf holes; type of golf course (private versus public); the cost to play golf (greens fee); golf course length as measured in yards (back tees); golf course difficulty as measured by the USGA "Slope" and "Course Rating;" and, the time it takes a foursome to play a round of golf.

Univariate Analysis and ANOVA

A univariate analysis of the NGF secondary data was undertaken. This descriptive data was sorted by the golf course type and the year built (opened), and the variables of interest were calculated for comparison of the group means from the golf courses built in the 1920s, the 1960s and the 1990s. Sometimes a group mean does not provide the full depth and breadth of understanding needed for this sort of study, so the distributions of the group means were also analyzed and interpreted.

Additionally, a one-way ANOVA was undertaken to test the "… differences between the means of an interval-ratio-level dependent variable across three or more categories of an independent variable" (Healey, 2009, 247). In this application, the average cost of playing golf (greens fee); the average length of the golf courses (in yards); the average difficulty ratings (USGA Slope and Course Rating) and the average time that it takes a foursome to play 18-holes (in minutes) were tested to determine if the means between the grouping of population means of the three golf course development boom periods, the 1920s, 1960s and 1990s were statistically different.

Table 3.1: Golf Course Variable Mean Measurements

Decade	Cost	Length	Difficulty	Pace (Time to Play)
1920s	$$	Yardage	Slope & Course Rating	Minutes
1960s	$$	Yardage	Slope & Course Rating	Minutes
1990s	$$	Yardage	Slope & Course Rating	Minutes

3.3 Qualitative Analysis: Expert Interviews

Silverman notes that the "… interview study highlights the advantages of qualitative research in offering an apparently 'deeper' picture than the variable-based correlations of quantitative studies" (Silverman, 2006, 25–26). The quantitative analysis described how the nature and type of golf courses built during the 1990s had changed; however, why that change occurred is not revealed in the quantitative analysis of the NGF database and the NGF *Pace of Play* survey data.

The literature review laid the foundation for formulation of the conceptual framework, and revealed the influential role real estate developers played in building golf courses that were more costly, difficult and took longer for the average golfer to play. To further explore this, a qualitative study is needed to provide additional insight regarding the real estate developers' and the golf course architects' motivations and interests. Therefore, in-depth expert interviews were undertaken with prominent golf course real estate developers and golf course architects. The goal and objectives for the expert interviews was to obtain a clearer perspective regarding how and why golf's built environment had changed during the 1990s golf course development boom period.

CHAPTER FOUR

QUANTITATIVE ANALYSIS: NGF GOLF FACILITY DATABASE

4.1 Introduction

The purpose of this research is test the hypothesis that the nature and type of golf courses built over the course of the three golf course development boom periods in 20th century had changed over time. The NGF Golf Facility Database and the NGF *Pace of Play*[11] survey were the sources of the data that are analyzed. The NGF database is updated on an ongoing basis as every golf course in the U.S. is called by the NGF staff dedicated to this task to update and validate the golf courses' profile information. In Appendix A, there is a listing of the information compiled and updated for the NGF database. For the purposes of this study, the data used for this analysis was based upon the information in the NGF database as of December 31, 2011.

As noted, the NGF database does not have information on the time it takes for a foursome to play 18-holes during the peak season, nor does it have information regarding any golf course renovations made by golf courses to make the courses longer and/or more difficult for average golfers to play. So, the NGF undertook an online survey of golf course managers to obtain this information for the golf courses built in the 1920s, the 1960s and the 1990s. The online survey of the golf courses was sent on March 13, 2012, and the survey results were compiled and then analyzed on March 28, 2012.

[11] The NGF *Pace of Play* survey instrument and the findings are provided in Appendix B.

The descriptive statistics that constitute the key variables of interest include: cost of playing golf; length of the golf courses; the average difficulty ratings (USGA Slope and Course Rating) and the average time that it takes a foursome to play 18-holes.

This data was analyzed to determine the mean, standard deviation, standard error, and the mean range (minimum to maximum) for the variables, which are used to interpret and explain the distributions of the data that comprise the group means in the univariate analysis and the one-way ANOVA statistical procedure.

Section 4.2 provides the operational definitions for the variables of interest, and delineates the parameters for the analyses including: a) Time Periods; b) Subject Golf Courses; c) Costs/Greens fees; d) Study Universe; and, e) Study Sample.

Section 4.3 presents the univariate analysis. This descriptive data was sorted by the golf course type and the year built (opened), and the group means for the variables of interest were compared and contrasted to the group means for the golf courses built in the 1920s, the 1960s and the 1990s. However, sometimes the means do not tell the whole story, so the range and distributions of the variables of interest were analyzed as well.

In section 4.4, the group means for these variables used an ANOVA statistical procedure to test the hypothesis that the variances between the group means are equivalent. Since there were statistically significant differences in the variances of the group means for the golf courses built in the 1920s and 1960s compared to the group means for the golf courses in the 1990s, the results support the research hypothesis that there has been a paradigm change in the nature and type of golf courses built in the 1990s.

4.2 Definitions

Definitions[12] for the variables of interest are as follows:

A. *Time Periods:* Golf courses built during the golf course development boom periods of the 1920s, the 1960s and the 1990s. Only those golf courses opened during each decade were included in the study. Decade defined as, e.g., January 1, 1920 to December 31, 1929.

B. *Golf Courses:* Subject golf courses were selected to be those:

   i. Of regulation length, which is defined as being at least 5,200 yards in length and at least par 66 from its longest tees;

   ii. Containing 18 holes only; 9-hole golf courses and golf courses with more than 18 holes were excluded from the study;

   and,

   iii. Were either public golf courses or private clubs such as:

   Public courses are defined as those which are open to the public at all times. Public golf courses may be owned privately or publicly (e.g. municipalities or other governmental entities). They may be resorts and/or golf community real estate developments. *Private clubs* are defined as those golf facilities that restrict play (access) to members and their guests. Private clubs that allow outside (non-member) play are sometimes referred to as "semi-private," and are considered to be "public" golf courses for the purposes of this study.

C. *Cost:* The cost is the weekend green fee with a golf car for playing a public golf course during the peak season.[13]

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[12] See Appendix C for "Definition of Golf Terms," which was excerpted from the National Golf Course Owners Association report developed for the World Golf Foundation in cooperation with the major golf associations such as the PGA, USGA, GCSAA and PGA Tour.

D. *Difficulty:* The United States Golf Association (USGA) has two measurements systems, "Slope" and "Course Rating" that define the difficulty of a golf course:

   i. *Slope rating* is a measurement of the relative difficulty of a course for average (bogey) golfers compared to skilled (par or scratch) golfers. The term comes from the fact that when playing on more difficult courses, average golfers' scores will rise more quickly than their handicaps would predict. The "Slope rating" of a course thus predicts that rise. A golf course of standard playing difficulty has a slope rating of 113, and slope ratings range from a minimum of 55 (very easy) to a maximum of 155 (extremely difficult).

   ii. *Course Rating* is a measure of difficulty relative to the score that a skilled golfer would have for 18-holes. For example, a course rating of 66 compared to a course rating of 72 would indicate that a golf course with a lower number was easier to play than the golf course with a higher course rating.

E. *Length:* The total length of the golf course is measured in yards from the back or furthest tees.

F. *Pace of Play:* The average time that it takes a foursome to play 18-holes on a weekend during peak season is measured in minutes and converted into hours and minutes in the design of the survey instrument as well as in the analysis and presentation of the results. For example, if it took a

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[13] Only those golf courses that offer a daily fee were selected for this analysis, which would include resort golf courses and all privately and publically owned public golf courses. Since private clubs do not publish their guest fee rates and because 72% of the golf courses are open to the public, it was determined for this study that the posted green fee at public golf courses was representative of the cost of playing golf variable.

foursome 270 minutes to play a round of golf that would equal four and a half hours[14]

G. *Study Universe:* The study universe includes all 18-hole regulation length golf courses in the NGF Golf Facility Database that are still open for business as of December 31, 2011, and were built during the 1920s, 1960s and 1990s.

Table 4.1 depicts the sample selections for the 18-hole golf courses built in the 1920s, 1960s and 1990s. The total number of golf courses selected is 4,609, which is 49% of the study universe of 9,470 18-hole golf courses that are open for play in the NGF Golf Facility Database. The calculation of the percentages for the sample data by "Decade Built" compared to the percentages for the 18-hole golf courses built in each "Development Era" are very close to the same as noted in the following: the proportion of the 1920s golf courses was 24%, compared to 23% for the development era; the 1960's sample was 35% compared to 37% for the development era; and, the 1990's sample was 41% compared to 40% for the development era. Therefore, the sample selection is representative of all 18-hole regulation length golf courses in the study universe.

[14] See Appendix B., for a copy of the NGF *Pace of Play* survey instrument.

Table 4.1: Study Universe

Decade Built	Count	%	Development Era	Count	%
1920s	1,085	12	<1940	2,159	23
1960s	1,637	17	1940–1979	3,510	37
1990s	1,887	20	1980+	3,801	40
Total	4,609	49		9,470	100

Source: NGF Golf Facility Database (December 2011).

H. *Study Sample*: The sample size varies depending upon the variable of interest that is studied, and data is not available for all of the variables for all golf courses in the sample. The NGF Golf Facility Database contains data pertaining to the variables of interest for cost, length and difficulty (Slope and Course Rating) for most golf courses; however, the time or "pace of play" information required primary data collection in a survey of golf course operators that was conducted in March of 2012.

Table 4.2 shows the sample sizes for the data obtained from the NGF database. Note that the sample size for the 1920s cost variable is much lower than the cost variable for the 1960s and 1990s. This can be explained. First, the count in Table 4.1 for the number of surviving courses is substantially less for the vintage 1920s courses that are still open for business. Second, private clubs do not publish their guest fees, and since 80% of the golf courses built in the 1920s were private clubs, compared 45% in the 1960s and 28% in the 1990s, it is understandable why there is a lower sample size (n=584) for the cost variable in the 1920s.

Table 4.2: NGF Database Sample Sizes for Variables of Interest

	Cost	Length (Yardage)	Difficulty (Slope)	Difficulty (Course Rating)
1920s	584	1,064	1,033	1,033
1960s	1,220	1,593	1,530	1,537
1980s	1,887	1,818	1,749	1,751

Source: NGF Golf Facility Database (December 2011)

The NGF *Pace of Play* on-line survey was sent to the 9,100 golf courses in the NGF database that had an email address. The response rate was 7% with 637 email surveys returned, which is typical for on-line surveys of this type. Since the analysis for the other variables of interest derived from the NGF database excluded nine-hole golf courses and golf courses with more than 18-holes, that same sorting of the data for golf courses with only 18-holes reduced the sampling frame to 483 survey responses in the NGF *Pace of Play* survey. The sample breakdown for the number of responses from daily fee golf courses was 292, the number for municipal golf courses was 187 and the number for private clubs was 187. Of that total number of responses by golf course by type, 76% or 483 were responses from 18-hole regulation length golf courses (Table 4.3).

Table 4.3: Sample Breakdown for NGF *Pace of Play* Survey

Golf Course Type	Sample (n)	%
Daily Fee	292	46
Municipal	158	25
Private	187	29
Total	637	100
18-hole Regulation Length	483	76

Source: NGF *Pace of Play* survey (March 2012)

I. *Representativeness of Sample*: Since the sample selection for the variables of cost, length and difficulty were drawn from the NGF Golf Facility database that is a census of all U.S. golf courses; the sample selection is representative of the study universe. As noted, the NGF *Pace of Play* survey was sent to the 9,100 golf courses in the NGF database that had email addresses. The survey response rate was 7% with 637 respondents, of which 76% or 483 were from 18-hole golf courses. The sampling frame of 483 respondents was reduced further by the number of respondents in each of the decades of interest (1920s, 1960s and 1990s). Therefore, this analysis excluded the survey respondents for the golf courses built in the decades not being evaluated, which reduced the sampling frame from 483 to 223. The remaining number of survey respondents (223) was deemed by the NGF to be representative of the 18-hole regulation length golf course population by type of golf course (daily fee, municipal and private) for the golf courses built in the 1920s, 1960s and 1990s.

4.3 Univariate Analysis

Table 4.4 presents the descriptive statistics for the relevant variables of interest (cost, yardage, slope, course rating and pace of play) across the three decades of interest (1920s, 1960s and 1990s). The sample size (Valid N), mean, standard deviation, standard error and the minimum/ maximum ranges for the variables are provided. Of note is that the descriptive statistics for the first four variables were drawn from the NGF Golf Facility Database. The fifth statistic, pace, was drawn from the NGF *Pace of Play* survey, which had a much smaller, but representative sample size of 223 as noted above.

Table 4.4: Descriptive Statistics

Variable of Interest		Valid N	Mean	Std. Deviation	Std. Error	Min.	Max.
Cost (Public Greens Fee)	1920s	584	$47.13	23.413	.969	$20	$250
	1960s	1220	$44.79	22.981	.658	$18	$360
	1990s	1562	$58.52	32.955	.834	$15	$300
Total/Sample		3366	$51.57	28.855	.497	$15	$360
Length (Yardage)	1920s	1064	6378.86	357.479	10.959	4458	7468
	1960s	1593	6467.54	417.783	10.468	4433	7594
	1990s	1818	6699.41	419.596	9.841	4130	7728
Total/Sample		4475	6540.65	427.017	6.383	4130	7728
Slope	1920s	1033	123.29	7.666	.239	97	142
	1960s	1530	121.70	8.695	.222	66	149
	1990s	1749	129.01	8.871	.212	89	158
Total/Sample		4312	125.05	9.160	.139	66	158
Course Rating	1920s	1033	70.53	2.731	.085	34	78
	1960s	1537	70.63	3.066	.078	35	78
	1990s	1751	72.01	3.113	.074	34	78
Total/Sample		4321	71.17	3.088	.047	34	78
Pace of Play (Time/ Minutes)	1920s	43	247.67	19.128	2.917	200	290
	1960s	82	258.29	15.855	1.751	230	300
	1990s	98	267.45	17.952	1.813	240	330
Total/Sample		223	260.27	18.886	1.265	200	330

Source: NGF Golf Facility Database (2011) and NGF *Pace of Play* survey (March 2012)

Cost of Golf

The golf courses built in the 1990s had an average greens fee of $59 per round compared with $45 and $47 per round for the 1960 and 1920 vintage courses. On average, the 1990s golf courses cost 24% more to play than the 1960s golf courses and

20% more than the golf courses built in the 1920s. Table 4.5 shows that the mean cost for playing golf (greens fee) are substantially higher for the golf courses built in the 1990s.[15]

Table 4.5: Cost/Greens Fee by Decade Built

Decade Built	Count	Valid N	Mean Cost
1920s	1,085	584	$47
1960s	1,637	1,220	$45
1990s	1,887	1,562	$59

Source: NGF Golf Facility Database (December 2011)

The "Count" is the NGF database listing for the number of 18-hole golf courses in each decade of interest. The "Valid N" is the number of 18-hole golf courses in the NGF database that have an email address and a published greens fee. For example, in the 1920s, the count is 1,085 and is substantially higher than the sample "n" of 584, which reflects the higher percentage of golf courses from that decade that are private (80%) that do not have a published greens fee, as well as the number of 18-hole golf courses that have an email address in the NGF database.

While there are private clubs that do allow public play, such as resort golf courses that also may have a membership, the cost for playing golf for this analysis is based upon the published golf course greens fee. Interestingly, the greens fee for the golf courses built in the 1960s were slightly less than the greens fee for the golf courses built in the 1920s, which may be due to the fact that during the 1960s, the type of golf courses built

[15] Note that these reported greens fees are the posted "Rack" rates for playing a round of golf. Typically, the greens fees are discounted, but for this analysis, the price differences are relative to the posted prices sans the discount.

were predominantly public golf courses that were more economical to play than private golf courses. This may have put some downward pressure on the average greens fee for golf courses built in that era. However, this analysis also shows that the average greens fee for golf courses built in both the 1920s and 1960s were about the same, and the golf courses built in the 1990s had much higher greens fees. Therefore, the golf courses built in the 1990s cost more to play than the golf courses that were built in the 1920s and the 1960s.

Table 4.6 presents three price ranges for greens fee: $40 or less; $41 to $70; and, $71 or more, and shows the distribution of the three price ranges in terms of the percentages for each category of greens fee. For example, 39.4% of the golf courses built in the 1920s have a greens fee of $40.00 or less, and only 6.5% have a greens fee of $71.00 or more. The significant difference in the pricing is evident when comparing those same categories to the golf courses built in the 1990s, whereby 27.7% have a greens fee of $40.00 or less and 21.1% have a greens fee of $71.00 or more.

Table 4.6: Distribution of Golf Courses by Greens Fee

Greens Fee	1920s	1960s	1990s
$40 or Less	39.4%	50.2%	27.7%
$41 to $70	54.1%	42.5%	51.2%
$71 or More	6.5%	7.3%	21.1%

Source: NGF Golf Facility Database (December, 2011).

Golf Course Length

Regulation length golf courses are defined as being at least 5,200 yards in length and having at least par 66 from the longest tees. Table 4.7 shows how the average lengths of golf courses were longer with each ensuing golf course development era. The average length of the golf courses built in the 1990s is 6,699 yards; the average length of the golf courses built in the 1920s is 6,397 yards, which is 302 yards less in spite of the fact that 39% of those golf courses were lengthened according to the NGF *Pace of Play* survey.[16] The average length of the golf courses built during the 1960s is 6,468, which is 231 yards less in spite of the fact that 47% of those golf courses were lengthened.[17] Ironically, 27% of the golf courses built in the 1990s were also lengthened to make them more difficult to play.[18]

Table 4.7: Mean Golf Course Length by Decade Built

Decade Built	Count	Valid N	Mean Yardage
1920s	1,085	1,064	6,379
1960s	1,637	1,593	6,468
1990s	1,887	1,818	6,699

Source: NGF Golf Facility Database (December 2011)

[16] See Appendix C. NGF *Pace of Play* study findings regarding golf course renovations to make the golf courses longer and more difficult.

[17] ibid.

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[18] ibid.

Table 4.8 presents three ranges for golf course length: golf courses having 6,400 yards or less, golf courses having 6,401 to 6,800 yards; and, golf courses having 6,801 yards or longer.

It is surmised from this analysis that the golf courses built in the 1920s and open today are generally shorter in overall length. Nearly 47% are 6,400 yards or less, compared to 19% of the golf courses built in the 1990s; notably, 91% of the golf courses built in the 1920s are 6,800 yards or less, while only 51% of the golf courses built in the 1990s were 6,800 yards or less. Lastly, only 9% of the golf courses built in the 1920s were 6,801 yards or more compared to 49% of the golf courses built in the 1990s.

Table 4.8: Distribution of Golf Courses by Length

Length (Yardage)	1920s	1960s	1990s
6,400 or less	46.6%	37%	18.6%
6,401 – 6,800	44.8%	41%	32.0%
6,801 or more	8.6%	22%	49.4%

Source: NGF Golf Facility Database (December 2011)

This stark contrast among the categories of yardages ranges for the golf courses built in the 1920s compared to the golf courses built in the 1990s is more revealing than just comparing the mean yardages by decade. It is clear, that golf courses built in the 1990s are longer than the golf courses built in the 1920s and the 1960s.

Golf Course Difficulty

Table 4.9 illustrates how the longer average length of a golf course during each development era corresponds with a higher USGA “Slope” and golf “Course Rating.”

Table 4.9: Golf Course Slope by Decade Built

Decade Built	Valid N	Slope
1920s	1,033	123.2
1960s	1,530	121.7
1990s	1,749	129.0

Source: NGF Golf Facility Database (December 2011)

The mean Slope rating for the golf courses built in the 1990s is 129, which is significantly higher than the group means for the golf courses built in the 1920s at 123.2 and the golf courses built in the 1960s at 121.7. Interestingly, but not statistically significant is that the mean Slope for the golf courses built in the 1920s is slightly higher than the Slope for the golf courses built during the 1960s, even though the mean yardage for the golf courses is 89 yards less. While this may seem to be counterintuitive, it can be explained. It relates in part to how the Slope and Course Rating for a golf course is calculated.

While the length of the golf course is the underlying factor in the determination of golf course difficulty, there are additional factors that can affect the Slope rating such as the design of the golf holes, the hazards, the type of greens, the mowing height of the roughs, and the maturity of the landscape.[19] In this situation the differences in the group means for the 1920s and 1960s golf courses are not statistically significant; however, the differences in the group means are statistically significant when compared to the average Slope for the golf courses built during the 1990s (Table 4.10).

[19] Older golf courses tend to have more mature trees, which have the effect of crowding the fairway corridors thereby making the golf holes more difficult to play.

The mean Course Rating for the golf courses built in the 1990s is 72, which is significantly higher than the group means for the golf courses built in the 1920s at 70.5 and the golf courses built in the 1960s at 70.6. Both the Slope and the Course Ratings indicate that the golf courses built in the 1990s were more difficult to play compared to the golf courses built in the 1920s and 1960s.

Table 4.10: Course Rating by Decade Built

Decade Built	Valid N	Course Rating
1920s	1,033	70.5
1960s	1,537	70.6
1990s	1,751	72.0

Source: NGF Golf Facility Database (December 2011)

Table 4.11 and Table 4.12 present three ranges for golf course difficulty for each measurement system, respectively. Slope ratings are categorized as: 119 or less; 120 to 129; and 130 or more. Course Ratings are categorized as: 70 or less; 71 to 74; and 75 or more.

The distribution of the group means for the Slope and Course Rating measures are similarly revealing in depicting how the golf courses built in the 1990s were more difficult than the golf course built in the 1920s and 1960s. For example, approximately 30% of the golf courses built in the 1920s have an average Slope of less than 119 and 46% of the courses have an average Course Rating of less than 70. This compares to only 15% of the golf courses built in the 1990s with an average Slope that is less than 119 and only 22% with a Course Rating that is less than 70. More revealing is that 21% of the golf courses built in the 1920s and 17% of the golf courses built in the 1960s have a

Slope rating of 130 or more, while 51% of the golf courses built in the 1990s have a Slope of 130 or more, which is unequivocal evidence that the golf courses built during the 1990s were more difficult than the golf courses built during the 1920s and 1960s.

Table 4.11: Distribution of Golf Courses by Slope

Slope	1920s	1960s	1990s
119 or less	29.6%	38.7%	14.6%
120 – 129	49.0%	44.1%	34.5%
130 or more	21.4%	17.2%	50.9%

Source: NGF Golf Facility Database (December 2011)

Table 4.12: Distribution of Golf Courses by Course Rating

Course Rating	1920s	1960s	1990s
70 or less	45.7%	48.4%	22.4.%
71 – 74	53.6%	49.6%	70.8%
75 or more	.7%	2.0%	6.8%

Source: NGF Golf Facility Database (December 2011)

Pace of Play

It seems logical that the golf course length and difficulty would be a factor in how long it might take for a foursome to play a round of golf; particularly, if the set-up and maintenance of the golf course was such as to make the golf course more challenging to play. For example, if the rough areas of the golf course are cut higher, the golfers may have to spend an inordinate amount of time looking for their golf balls and if they can find them, the thickness of rough areas will make extricating their next shot more difficult.

The NGF *Pace of Play* study was developed to ask course operators about why it takes so long to play a round of golf during the peak time periods. Of particular interest to this research were the following three questions: 1) How long does it take for a foursome

to play a round of golf at golf courses built in the 1920s, the 1960s and the 1990s? 2) Were there any renovations made to make the golf courses longer and more difficult to play? And, 3) What percentage of the golf courses built during the 1920s, the 1960s and the 1990s were tied to real estate development? The responses to the NGF *Pace of Play* survey questions are detailed in Table 4.13.[20]

Table 4.13 shows that the golf courses built in the 1920s and the 1960s both take less time to play than the golf courses built during the 1990s. The previous analyses of the variables of interest also showed that the golf courses in the 1990s were longer and more difficult, so it makes sense that it would take more time to play those golf courses. This rationale is supported by the NGF *Pace of Play* study finds, which identify that the average time for a foursome during the peak season to play 18-holes at a golf course built in the 1920s is 247 minutes (four hours and seven minutes); it takes 258 minutes (four hours and 18 minutes) to play a golf course built in the 1960s; and, it takes 267 minutes (four hours and 27 minutes) to play a golf course built in the 1990s.

Table 4.13: NGF *Pace of Play* Responses by Decade Built

Decade Built	Valid N	Mean Pace of Play (Minutes)
1920s	43	247
1960s	82	258
1990s	98	267

Source: NGF Golf Facility Database (December 2011) and NGF Pace of Play survey (March 2012).

[20] NGF *Pace of Play* survey was completed March, 2012 and has not yet been published. The survey instrument and responses are presented in Appendix B.

Table 4.14 presents what appear to be some peculiar splits or categorizations in the time it takes to play a round of golf: less than 4-hours; 4-hours; 4.1 to 4.5-hours; and, more than 4.5 hours. These seemingly overlapping time ranges reflected two factors. First, the generally acceptable standard time that an 18-hole round of golf should take to play is 240 minutes or 4-hours. Less than 4-hours is desired, more than 4-hours is considered undesirable, which explains, in part, why 4-hours became a separate category. Second, the formatting of survey question regarding the pace of play led to the categorization of those responses. The key question was, "What is the typical pace of play for an average foursome at your course (for an 18-hole round) during peak time and non-peak times? (SELECT FROM THE DROP-DOWN MENUS FOR EACH OPTION)." The drop-down menu listed a range of 10-minute time intervals starting at 3-hours to 5.5-hours. The respondent chose the interval that best reflected the average time that it took a foursome to play 18-holes during peak (and non-peak) times. For the purposes of this study, only the selection for the average time during peak times was used. The other options and questions pertained to other NGF research applications.[21]

This research study focuses on the question regarding the time it takes to play 18-holes during the peak season, because this analysis is only concerned with the relative mean times across the three decades of interest. Additional analysis and interpretations of the data may explain why it takes less time for a foursome of golfers to play a round on golf courses built in the 1920s and 1960s, compared to the golf courses built in the 1990s. One possible explanation is that when the golf courses were built in the 1920s and 1960s,

[21] See the NGF *Pace of Play* survey instrument in Appendix B.

golfers walked the golf courses. There were no golf cars. The golf courses were designed so that golf greens and the next tees were just a short walk away.

Also, the golf courses built in the 1920s and 1960s were shorter in length, which might explain why 47% and 38% of the golf courses built in the 1920s and 1960s respectively, take four hours or less to play, compared to 9% of the golf courses built in the 1990s, which have been verified as being longer, more difficult and, in many cases, necessitate the mandatory use of golf cars due to the meandering tracks through the real estate developments. This point is more poignant when observing that only 2% of the golf courses built in the 1920s take more than four and a half hours to play compared to 31% of the golf courses built in the 1990s.

As noted earlier, the real estate development golf courses had a larger footprint and were spread out to maximize golf course real estate frontage lot sales. Additionally, these golf courses were longer in length and more difficult to play in the 1990s, which increased the time that it takes to play a round of golf.

Table 4.14: Distribution of Respondent Golf Courses by Pace of Play

Pace of Play	1920s	1960s	1990s
Less than 4-hours	23.3%	21.0%	.0%
4-hours	23.3%	17.1%	9.2%
4.1 to 4.5 hours	51.2%	65.8%	60.1%
More than 4.5-hours	2.3%	13.4%	30.5%

Source: NGF *Pace of Play* survey (March 2012)

Golf and Real Estate

For the private golf clubs built in the 1920s, there was negligible real estate development around the golf course. For the most part, these golf courses were "Core" designs and were less costly, shorter in length, less challenging and time consuming for the average golfers to play. According to information from the NGF Golf Facility Database, 18% of the golf courses built in the 1960s have a real estate connection; and, 40% of the golf courses built in the 1990s were tied to real estate development. In the NGF *Pace of Play* survey, the percentage of golf courses built in the 1960s that had a real estate tie-in was 11% and the percentage of golf courses built in the 1990s was 45%, suggesting that the sample could be biased and slightly misrepresent the number of golf courses with real estate development ties.

Table 4.15 suggests that golf course improvements were often intended to make the golf courses longer and more difficult, presumably, to compete with the golf courses built in the 1990s. For example, 72% of the courses built in the 1920s were renovated; 39% of the golf courses were lengthened and 77% were redesigned to be more difficult. It was the same pattern for the golf course built in the 1960s as 65% were renovated; 47% were lengthened and 62% were redesigned to be more difficult. Surprisingly, 36% of the golf courses built in the 1990s were also renovated; 27% were lengthened and 42% were redesigned to be more difficult. How and why this occurred will be explored further in the qualitative section of this thesis.

Table 4.15: Golf Course Renovations by Decade

Decade Built	Sample	Real Estate Tie-in	Renovated	Lengthened	More Difficult
1920s	43	3%	72%	39%	77%
1960s	82	11%	65%	47%	62%
1990s	98	45%	36%	27%	42%

Source: NGF *Pace of Play* survey (March 2012).

Results from the NGF *Pace of Play* survey suggest that the influence of golf real estate development has been more far reaching than previously known. Existing golf courses and stand-alone golf courses (no real estate) also have made the golf courses longer and more difficult to play in order to compete with the high-end golf courses built by real estate developers in the 1990s.

Summary Analysis

This univariate analysis described the changes in the variables that characterized golf's built environment. The means for those variables, the cost for playing golf, the length (yardage) of the golf courses, the measures for golf course difficulty (USGA Slope and Course Rating) and the time it takes to play (pace), were calculated for the selected samples of golf courses built during the 1920s, 1960s and 1990s. However, the analysis of averages does not provide the depth and breadth of understanding needed to compare and contrast the group means for each development era, so the distribution of the group means was also explored.

The univariate analysis explained how the group means for the golf courses built during the 1990s were different for the golf courses built during the 1920s and 1960s. It

revealed that the golf courses built in the 1990s were more costly to play, longer, more difficult and took longer to play.

4.4 ANOVA and Hypothesis Test

The analysis of the NGF database identified and described the key variables of interest, which is intended to explain the change in the nature and type of golf courses built during each golf course development decade. The purpose of this research is to test the hypothesis that these key descriptive variables (cost, length, Slope, Course Rating and pace) have changed over time. The time periods for the sample (group) selections are those golf courses that were built during one of the three separate development boom periods of the 20th century: the 1920s, the 1960s and the 1990s.

An Analysis of Variance (ANOVA) will test the null hypothesis that the group means for the golf courses built during the 1920s, the 1960s and the 1990s development decades were equivalent. The null hypothesis (H_O) is that there are no statistically significant differences in the variances of the group means (for the golf courses built during the three decades of interest). The alternative hypothesis (H_A) is that the differences in the variances of the group means are statistically significant. If there is a statistically significant difference in the variances of the group means, the research hypothesis is confirmed indicating that there has been a paradigm change in the nature and type of golf courses built during the 1990s.

In Table 4.16, the Levene test is used to determine if the variances of the group means are statistically similar or different. This test was used instead of the Harley F test because the Levene test does not require that the population have a normal distribution

(Ott & Longnecker, 2010). The Levine F statistic for the homogeneity of variances is identified in the "p-value" column of the table below. If the significance level (p-value) is greater than the critical value (typically .05), the assumptions regarding the homogeneity of the variances are met.

The p-values are less than .05 for all of the variables of interest except for the Course Rating (.115) and Pace (.358). So, the assumption for homogeneity of the variances cannot be made for all of the variables.

Table 4.16: Levene Test for Homogeneity of Variances

Variables of Interest	Levene Statistic	df1	df2	p-value
Cost (Public Greens Fee)	67.076	2	3363	.000
Length (Yardage)	13.620	2	4472	.000
Slope	8.717	2	4309	.000
Course Rating	2.163	2	4318	.115
Pace (Time/Minutes)	1.033	2	220	.358

Source: NGF Golf Facility Database (December 2011) and NGF *Pace of Play* survey (March 2012).

The Welch test was used because this analytic procedure does not assume the equality of variance to test for the equality of means. Results for the Welch test in Table 4.17 show clearly that all of the group means are .000 and less than the critical value of .05; therefore, there are statistically significant differences between the groups, and in all cases, the differences in the means is statistically significant.

Table 4.17: Welch Tests for the Equality of Means

Variable of Interest	Welch Statistic	df1	df2	p-value
Cost (Public Greens Fee)	87.105	2	1691.055	.000
Length (Yardage)	260.902	2	2772.706	.000
Slope	314.558	2	2669.236	.000
Course Rating	115.536	2	2663.699	.000
Pace (Time/Minutes)	17.685	2	108.986	.000

Source: NGF Golf Facility Database (2011) and *Pace of Play* survey (March 2012)

Table 4.18 presents the results for the Analysis of Variance (ANOVA), which analyzes the data to determine if there are statistically significant differences between the group means (for cost, yardage, Slope, Course Rating and pace variables).

The F-statistic in the one-way ANOVA procedure is a ratio of the variance between groups to the variance within groups. If the variances are equal, the ratio of the variances will be one-to-one; however, if the F-statistic is greater than one-to-one, it indicates that there are statistically significant differences in the group means. The F-statistics for variables of interest are as follows: Cost (90.5); Yardage (250.5); Slope (328.7); Course Rating (116.6); and, Pace (20.2). Therefore, the differences in the group means are statistically significant across the golf course development decades of interest.

If the significance level or p-value is below the critical value of .05 for the group means, then there is a statistically significant difference in the group means across the golf course development decades of interest (1920s, 1960s and 1990s). The p-value is .000 for all of the group means, which is less than the critical value of .05 and confirms that there are statistically significant differences in the group means.

Table 4.18: Analysis of Variance (ANOVA)

		Sum of Squares	df	Mean Square	F Statistic	p-value
Cost (Public Greens Fee)	Between Groups	143096.658	2	71548.329	90.502	.000
	Within Groups	2658684.295	3363	790.569		
	Total	2801780.953	3365			
Length (Yardage)	Between Groups	82188666.210	2	41094333.105	250.504	.000
	Within Groups	733617027.686	4472	164046.741		
	Total	815805693.896	4474			
Slope	Between Groups	47883.699	2	23941.850	328.737	.000
	Within Groups	313823.744	4309	72.830		
	Total	361707.443	4311			
Course Rating	Between Groups	2111.059	2	1055.530	116.593	.000
	Within Groups	39091.219	4318	9.053		
	Total	41202.278	4320			
Pace (Time/ Minutes)	Between Groups	12193.194	2	6096.597	20.021	.000
	Within Groups	66990.662	220	304.503		
	Total	79183.857	222			

Source: NGF Golf Facility Database (2011) and *Pace of Play* survey (2012)

Table 4.19 displays the results from the Tukey HSD ("Honest Significant Difference") and illustrates how the groups differed from each other. The Tukey is used to evaluate whether or not the differences between any two pairs of means are significant, which is useful in this analysis because the group means for the golf courses built in the 1920s and the 1960s are paired and compared to the group means for the1990s. If the difference is larger than the Tukey value, the difference is statistically significant.

Table 4.19: Tukey HSD Post Hoc Multiple Comparisons

Dependent Variable	Decade Built (I)	Decade Built (J)	Mean Difference (I–J)	Std. Error	p-value
Cost (Public Greens Fee)	1920s	1960s	2.345	1.415	.222
		1990s	-11.389	1.364	.000
	1960s	1990s	-13.734	1.074	.000
Length (Yardage)	1920s	1960s	-88.674	16.036	.000
		1990s	-320.548	15.634	.000
	1960s	1990s	-231.875	13.900	.000
Slope	1920s	1960s	1.590	.344	.000
		1990s	-5.726	.335	.000
	1960s	1990s	-7.316	.299	.000
Course Rating	1920s	1960s	-.103	.121	.673
		1990s	-1.483	.118	.000
	1960s	1990s	-1.380	.105	.000
Pace (Time/Minutes)	1920s	1960s	-10.618	3.286	.004
		1990s	-19.775	3.192	.000
	1960s	1990s	-9.156	2.612	.002

Source: NGF Golf Facility Database (December 2011) and *Pace of Play* survey (March 2012).

In the pairwise analysis for the vintage 1920s and 1960s courses, the variables with p-values that were not statistical significant were the greens fee at .222 and the Course Rating at .673. However, the separate pairwise comparisons for the 1920s and the 1960s vintage courses with the 1990s vintage courses were statistically significant. This makes sense because the mean public greens fee for the golf courses built in the 1920s and the 1960s were close at $47 and $45 respectively, and the mean greens fee for the golf courses built in the 1990s was considerably higher at $59. And, following the same rationale, the means for the Course Ratings of the golf courses built in the 1920s and

1960s were 70.5 and 70.6, respectively, which is not a statistically significant difference. However, when these two group means were compared to the mean Course Rating for the golf courses built in the 1990s that was 72.1, the difference was statistically significant as indicated by the p-value of .000.

Therefore, the differences in the group means for the golf courses built in the 1920s and 1960s were not statistically significant; however, the differences in the group means from the 1920s and the 1960s were both statistically significant compared to the group means for the golf courses built in the 1990s.

4.5 Study Findings

The univariate analysis illustrated that the group means for the golf courses built during the 1990s, were different from the golf courses built during the 1920s and 1960s. It revealed that the golf courses built in the 1990s were more costly, longer, and more difficult and took longer to play.

The ANOVA tested the null hypothesis that the group means for the golf courses built during the 1920s, the 1960s and the 1990s development decades were equivalent. The analysis rejected the null hypothesis, which compared the variables of interest from the vintage 1920s and 1960s golf courses to the golf courses built in the 1990s. The results found that the differences in the group means are statistically significant and support the research hypothesis that "…the nature and type of courses built or renovated during the 1990s development boom were more costly, longer, more difficult and took longer to play compared to the golf courses built during the previous golf course development boom periods in the 1920s and 1960s."

CHAPTER FIVE

QUALITATIVE RESEARCH

5.1 Introduction

The literature review and analysis of the NGF Golf Facility Database and the NGF *Pace of Play* study results answered many of the research questions regarding how golf's built environment had changed over the course of the three golf course development boom periods in the 20th century. The quantitative analysis of the descriptive data explained what had happened; however, this statistical depiction coupled with the situational analysis of the golf industry does not tell the whole story or reveal why the paradigm change in golf's built environment had occurred.

The purpose of this qualitative research is to get a better understanding of both how and why "The nature and type of courses built or renovated during the 1990s golf course development boom were more costly, longer, more difficult and took longer to play compared to the golf courses built during the previous golf course development boom periods in the 1920s and 1960s." Secondarily, this qualitative study offers some insights into the ramifications of this paradigm change in golf's built environment and the role that it may have played in the significant decline of golf participation over the last 10 years that has contributed to the current economic duress in the golf course business. In-depth expert interviews were undertaken to better understand the change in the nature of the game, golf's built environment and who is currently playing the game.

It was anticipated that the information gathered from these interviews would confirm the research findings as well as support the researcher's assessments and theory that led to the formulation of the research hypothesis. However, the expert interviews transcended the research findings and probed beyond the corroboration of the researcher's expectations. The interviews provided insight and understanding regarding the practitioners' motivations, interests and objectives in the development of the golf communities and the design of the golf courses in the most recent golf course development boom.

The in-depth interviews are not intended to be representative of the consensus views of the real estate developers and golf course architects; rather, the research objective was to go beyond the conventional wisdom of the time and provide a deeper understanding regarding their profession and business interests.

Section 5.2 identifies and profiles the experts interviewed. The selection process and the conduct of the interviews are described.

Section 5.3 highlights key points made in the interviews and focuses on the study's variables of interest that characterize the change in the nature and type of golf courses built in the 1990s.

Section 5.4 summarizes the qualitative research findings and presents a few redevelopment concepts from the interviewees regarding the future course of golf community development.

5.2 In-depth Expert Interviews

The selection of the interviewees was purposeful and based upon their experience and expertise, as well as the researcher's professional and personal relationship with them. While this familiarity could introduce some bias into the research, it was believed that the benefit and nature of these peer relationships would offset any insider bias, and lead to discussion and insight that might not be obtained otherwise.

Authors Singleton and Straits in, *Approaches to Social Research* (2005), and Sayer in, *Method in Social Science* (2006), offered opposing views relative to the advantages and disadvantages of allowing one's personal interests, objectives, beliefs and experiences to enter into the research design and process for a qualitative study. Singleton and other proponents of Positivism believe that there are certain fundamental laws of nature, an orderly process that can be logically deciphered through reason and the use of the scientific method. This approach is the preferred methodology for the natural sciences due to the more precise collection, measurement and management of the data. This approach does not work as well for study of the social sciences, because the nature of the social sciences does not lend itself to this empirical methodology, whereby the researcher is often isolated and/or apart from the phenomena studied, because he or she is not considered to be part of the research process.

Qualitative research requires that the investigator integrate his experience, knowledge and interest into the research process. The glaring limitation of the Positivism approach in research design is that it is limited in terms of what it does not study and reveal. Critics of the Positivism philosophy and approach such as Sayer (2006), Richards

and Morse (2007), and Creswell (2007) view this limited scope of study as being myopic and one dimensional in its view of reality, and as an inadequate methodological approach in social research. Furthermore, the researcher's personal involvement is essential in the qualitative research process.

Seven prominent real estate developers and five golf course architects were interviewed. In total, approximately 37 hours was spent to conduct the 12 interviews. It is estimated that the group of developers has been involved in the development of more than 120 golf communities; and, it is estimated that the group of architects has more than 400 golf course designs to their credit. Table 5.1 highlights the experience and expertise of the 12 expert interviewees. The detailed biographies and professional profiles are provided in Appendix D.

Table 5.1: Expert Interviewees' Profiles

	Name, Title & Company	Years Experience	# Golf Communities or Golf Course Designs	Interview(s) & Total Length of Time
1.	Champ Covington, CEO, Covington Properties	**40+**	3 as developer; 12 as home builder	**1 interview; 2-hours**
2.	Henry Delozier, VP of Golf, Pulte Homes	**30+**	27 golf communities; managed 20 golf courses	**2 interviews; 2-hours**
3.	Paul Fletcher, President, Fletcher Management Co.	**40+**	20 golf and master planned communities	**1interview; 2.5-hours**
4.	M.G. Orender, President, Hampton Golf (former PGA President.)	**30+**	26 golf communities; manages 10 golf courses	**2 interviews; 4.5-hours**
5.	John Reed, CEO, Reed Development	**40+**	20+ golf communities	**2 interviews; 4-hours**
6.	A.J. "Buddy" Thompson, M.D. Investor/Developer	**NA**	Reserve at Lake Keowee	**1 interview; 2.5-hours**
7.	Bob Whitley, CEO, Whitley Development Group	**40+**	15 high-end golf communities	**2 interviews; 3.25-hours**
1.	Tom Fazio, President, Fazio Design	**35+**	120+ golf course designs	**2 interviews; 2-hours**
2.	Jim McCumber, Chairman, McCumber Golf	**30+**	40+ golf course designs with brother, PGA Tour player, Mark McCumber	**1 interview; 1.5-hours**
3.	Greg Norman, Norman Design	**25+**	70+ golf course designs	**1 interview; 1-hour**
4.	Bob Walker, President, Robert C. Walker Design	**35+**	130+ golf course designs	**2 interviews; 6.5-hours**
5.	Bobby Weed, President, Weed Design	**25+**	25+ golf course designs; 20+ golf course redesigns	**2 interviews; 5.5-hours**

Approach

The in-depth expert interviews were intended to be 90+ minutes long; however, most of the interviews lasted two hours or more at the interviewees' instigation and several were interviewed more than once. The interview format was informal and conversational, but it was semi-structured in terms of the specific subject matter covered. The conceptual framework for the questions asked of the real estate developers and golf course architects followed a similar theme, but probed into the same subject matters with a twist that was related specifically to their respective business interests.

The interview script had open-ended questions, which were often points of departure for deeper discussion of a question or issue. Sometimes this approach made it difficult to stay on topic; however, the conversational nature of the interview did lead to some surprising insights and revelations. The golf course real estate developers were asked how they viewed the golf course in terms of it being an amenity in selling real estate, as well as the type of golf course that they wanted the golf course architects to design. The golf course architects were asked what type of golf courses they wanted to design, what latitude they were given in those designs and how that latitude was expressed in terms of the golf course design parameters and construction budgets.

Examples of the interview questions for the real estate developers were:

- How did you get into the golf community development business? Who influenced you most? Was golf your passion, or was it just a business opportunity or both?

- At what point in time did the golf course become an important amenity in selling real estate?
- How important was the reputation or notoriety of the golf course to the success of your real estate development?
- Did the fame of your chosen architect play a big role in the promotion of your project?
- When you hired an architect, did you ask him to build a golf course that could be ranked as a top 100 course? If that was unrealistic, did you want the architect to design a golf course that was a long and difficult golf course?
- How important was the golf course's reputation for difficulty in promoting, marketing and selling the real estate lots?
- When you developed a golf real estate development, did you typically subsidize the operation of the golf course?
- What was your exit strategy from the real estate development? Did you plan on selling the golf course or did you plan on keeping it and operating it?

Examples of the interview questions for the golf course architects were:

- Tell me about some of your earlier golf course design work and how it has changed over the years.
- How did you get into the golf course design business? Who influenced you most?
- When you were hired to design a golf course, was it important that it had the potential to become a top 100 course?

- How important was the golf course's reputation for difficulty in promoting your design business?
- How much latitude did you typically have in the design of the golf course? Typically, what are the design parameters imposed by the developer and how are they monitored?

Examples of the interview questions for both the developers and golf course architects were:

- Some people call this the "Tiger Effect,"[22] but I would like to have your opinion. Did the USGA indirectly encourage the development of longer and tougher golf courses by allowing advances in golf equipment technology that enabled the pros to hit the golf ball so much farther?
- Undoubtedly, the golf courses built in the 1990s were longer and more difficult than the golf courses built earlier. Existing courses, like Augusta were lengthened. The maintenance practices and course set up were also changed to make many of the classic designs more challenging. What the golfers see on TV today are deep roughs, narrow fairways and fast greens. In your opinion, has this helped or hurt the game?
- Now that golf course development is pretty much stymied by the economy, look into your crystal ball and tell me what you see. Is golf going to play the same role in real estate development as it has in the past?

[22] "Tiger Effect" refers to golf course operators and owners lengthening their golf courses to maintain their reputation as being a tough golf course that was long enough to tame the long hitting Tiger Woods.

- If the business model is broken, can it be fixed? What is the new golf community development paradigm?

Methodology

Qualitative research is subjective in nature and requires a more intuitive interpretation and analysis. This interviewing approach did not lend itself to transcription of the recorded interviews and the use of customary coding techniques. The parties were well acquainted and communicated at a level that does not necessitate that sort of regimen. Instead, the interviewer drew upon his experience and expertise to code those notes of particular relevance and insight. The making and analyzing of any thematic connections and considerations were the result of the interaction and intercourse with the interviewee.

This research was intended to reveal the influential role that real estate developers and the golf course architects played in fostering the change in the nature and type of golf courses built in the 1990s, as well to develop a better understanding of what the prevailing perspectives were that precipitated that change. Validation of this research premise and business mentality helped explain how and why the change in golf's built environment occurred in the 1990s. The protocol and interviews were documented, which will provide for peer review as well as outside replication. [23]

[23] The interviews were conducted in compliance with the Institutional Review Board (IRB). IRB protocol involving human participants qualified as "Exempt" from continuing review under Category B2, based on the Federal Regulations (45 CFR 46). A copy of the IRB approval letter, the approved interview consent form and the interview templates are provided in Appendix F.

5.3 Discussion

The information gathered from these interviews corroborate and verify the facts and analyses in the preceding chapters, as well as provide a different perspective and insight as to the motivations and interests of the real estate developers and golf course architects, who were active during the last golf course development boom. For example, these interviews revealed how the Fraser golf course and real estate business model was supposed to work and what the future may hold for golf community development. Also, it was interesting to see how the developers and architects viewed changing market and economic phenomena that transformed that business model, what they perceived the driving forces to be in the metamorphosis of golf's built environment and how their professions will change in response to the crisis confronting the future of the game and the golf course business.

Sometimes what they did not say was more revealing than what they did say. Sometimes what they said did not match up with what they actually did. For example, and without singling out any particular real estate developer or golf course architect, it is safe to say that everyone declared unequivocally that their primary interest was in developing and/or designing golf courses that would meet the golfing needs of their customers. But, what did they build? With the exception of those developers who planned to own and operate the golf course(s) after the real estate was sold, most of the developers built golf courses that were an amenity to sell real estate lots at premium prices. The operations of these golf courses were subsidized, because the exit strategy was to sell the golf course once the real estate was sold.

As a result, many of the golf courses built or renovated in the 1990s were not sustainable. These golf courses were costly to build and maintain; they were long and difficult to play; and, the routings of the golf courses were such that the only way to traverse the golf course was to use a golf car to go from the green to the next tee that was sometimes a quarter of a mile or more away. Often, the developers said one thing, but did another. There was nothing sinister in their intent. They are in the real estate business to make money and thought that this was the best way to accomplish that objective.

Most of the golf course architects did not see themselves as being culpable or co-conspirators in what now seems to be an unholy alliance of vested interests. Some stated that they only designed the type of golf courses that the developers wanted; and, it was clear that the developers wanted golf courses that would gain fame and notoriety for their difficulty. However, the architects also had a vested interest in building a golf course that would find its way onto the *Golf Digest* "Top 100" list, which is essentially a listing of the toughest golf courses in the U.S.[24]

If an architect had a golf course or two on that important list, it was likely that their design fee would increase commensurately with that recognition. Yet, there were stories told about architects who did not acquiesce to the allure of fame and fortune. Developer Covington told a story about Donald Trump wanting Fazio to design the hardest golf course in the world; and, Fazio reportedly told him, "No thanks, you

[24] The researcher served as *Golf Digest* Top 100 panelist for over 20 years and learned firsthand that in order for the golf course to make the list, it had to be difficult.

probably should find someone else." Trump did just that and, in many ways, was an exemplar for the developer mentality that took the golf industry down the wrong path.

To follow are some interesting comments and insights from both the developers and architects regarding how and why there was a change in the nature and type of golf courses built during the 1990s golf course development boom period. This analysis will first discuss the symbiotic relationship between the real estate developer and the golf course designer in developing and marketing a golf community, and then take a closer look at the progeny spawned from their communion of interests that created golf courses that were too costly, too difficult and took too long for the average golfer to play, which was the main focus of this dissertation.

Role of a Golf Course in Marketing a Real Estate Development

Reed was a disciple of Charles Fraser, and as CEO of Reed Development has developed five major golf communities in Bluffton, South Carolina (near the Hilton Head area). He believes that, "Ultimately, it's the view and the community ambiance that creates the value. The overall quality of the development, the branding and the marketing mystique are the key elements that differentiate one project from another. During the 1990s, the most important amenity was the golf course, so the money was invested into the golf course to create the highest return on investment (ROI) in terms of maximizing real estate values." Reed underscored this point in a second interview stating that "This business is really all about giving the customers what they want to buy. The reason why golf courses were such an attractive amenity was simply that they offered a panoramic

view that everyone enjoyed. The percentage of people who played golf had nothing to do with the valuations, both golfers and non-golfers enjoyed the golf course view."

In a presentation made in April of 2012 at Clemson University's *GOLF S.O.S: Symposium on Sustainability,* Reed stated that "What we need to do today and tomorrow is simply to give people what they want, not what we think they should want." He went on to say that the issues that must be addressed relate to: "Time" because we need to offer a golf experience that does not take five hours, rather, we need to offer an alternative that might only take an hour; the "Women's Movement," because 92% of the real estate purchase decisions are made by women so we need to appeal to their social and family interests; the "Generational Shift," because the "Eisenhower" generation is giving way to the "Baby Boomer" generation, which has different values and needs; and, the new "Market Reality," where home purchase decisions are based more on lifestyle needs and not driven by real estate speculation.

Whitley has a different development philosophy regarding the marketing and promotion for a high-end golf community, "As one who has developed a number of properties and worked with a variety of designers—from the biggest names to those lesser known—I have developed my own philosophy as it relates to the value of the 'name.' I don't care who does the golf course; it's only as good as it is."

In two interviews with Whitley, he explained why the real estate purchaser would want to buy a home in a golf community that had a big name architect. "Officially or unofficially, Jack Nicklaus, Tom Fazio and Pete Dye have come to be recognized as the contemporary triumvirate of golf architecture. Our society has become label conscious in

so many market segments, from clothes to cars to almost anything else you can name, and golfers are no different because they have developed a designer mentality that hardly existed even 30 or 40 years ago, much less earlier in golf's evolution. Today, the overwhelming majority of properties market themselves according to the designer of the golf course. Advertising often features not only the architect's name but his picture, as well, indicating that the designer has become as much a selling point as a photo of a beautiful and dramatic hole. It's not uncommon to be asked if we've played the new Nicklaus or Fazio course."

When asked how the architect's name impacts real estate values, Whitley responded, "We sometimes hear that having a Nicklaus course or a Fazio course adds to the price of your investment, but I don't believe that. Do you get communities with higher prices because one of the 'big three' did the golf course? Or, is one of the 'big three' there because the community is being developed in such a manner as to command higher prices for the real estate? I suspect that the latter is more often the case."

Whitley then made the point that "…what you get with the big name is a track record. There is an implied guarantee that with a name architect, you are going to get a certain level of golf course. Generally, going into the project, the name architect is going to get a better budget with which to work. No one puts together a business plan to build a low-budget project, and then hires one of the big three to design their golf course. They don't do that because they can't afford it. So by definition, the second-tier designers sometimes get the second-tier projects, but that's not always the case. Just because a developer hires one of the big three, don't automatically think that the developer is

stronger, financially, than the developer who hires Tom Doak, Steve Smyers or any of a number of very talented architects who are doing some very fine work."

An interesting and different perspective comes from Paul Fletcher, who along with his brother Jerome, have focused on the development of high-end mixed use developments, hotels, golf and waterfront communities. Fletcher is not a golfer (played only one round of golf in his life). He considers himself to be a real estate developer who has successfully dabbled in the golf community development sector of the industry.

Of particular note regarding their golf community development experience is their sale of 415 acres to PGA Tour for $1.00, which became the focal point of a 5,300 acre golf community and mixed use development in Ponte Vedra Beach, Florida. The PGA Tour used that 415 acre parcel for the development of the 36-hole Sawgrass Tournament Players Club (TPC) and to build their national headquarters. This was a great deal for the Fletchers because they did not need to fund the development of the two golf courses, but received all of the benefits and recognition that accompanies the hosting of a high profile professional golf tournament that is televised. Typically, the developer of a golf community must fund the construction of the golf course and subsidize the operation while selling the real estate lots. In this case, the PGA Tour funded that development, and this exposure put the real estate development on the world stage with the hosting the Players Championship and other major golf events. Meanwhile, the Fletchers developed hotels, a shopping center, commercial buildings and office parks, several adjoining golf communities and a separate upscale golf community that was adjacent to the PGA Tour

"Players Club" development. None of these real estate developments would have been possible had the Fletchers not sold the original 415 acres to the PGA Tour for $1.00.

The Fletchers liked using the golf course as a lead amenity to sell real estate lots, because it provided them with a way to create premium priced lots in the interior sections of the development project. If they could afford a famous architect, it was worth the higher design fee. The Fletchers were never really interested in operating the golf courses for any of their golf community developments, because they never viewed the golf course as a profitable enterprise. Since they had to subsidize the operation of the golf course, they got rid of the golf course as soon as possible.

Ironically, Fletcher's interview did not support some of the researcher's original contentions that the real estate developers wanted to make the golf courses longer and more difficult, in order to enhance real estate values and increase sales. Fletcher wanted the golf courses to be aesthetically pleasing and he believed that famous golf course architects were an important part in promoting and positioning the real estate project as a high-end development. When he was asked why he picked Fazio for their new project south of Savannah, he said that Fazio is generally considered to be one of the best architects in the world, which would add credibility to the development and help sell the real estate. Their objective was to provide a quality country club golfing experience at a reasonable price. Fletcher emphasized that the golf course's aesthetic appeal was his primary interest because, "The golf course and water views create the highest values and that is what sells real estate."

All of the developers agreed that having a big name architect and a great golf course enhanced real estate values, but none of them acknowledged that they wanted to have a golf course that was costly to play or famous for its difficulty.

Golf Courses Are Too Costly

Thompson, developer of the Reserve at Lake Keowee, noted that when he and his business partners were developing the marketing strategy for the Reserve at Lake Keowee in upstate South Carolina, they had followed the business model that had been so successful for the nearby Cliffs' communities. However, Thompson took a different approach in positioning the Reserve as a family oriented and multi-generational community. Over the course of the first six years, lot sales were approximately $200 million. But, the real estate market had changed dramatically in 2007, "Sales were booming. Before then, it was not unusual for someone to visit, find a property that they liked and commit to buying it on the same day they found it. Real estate was a safe bet. If they decided to not build, they believed that they could quickly sell the property at a profit."

Fueling this sales euphoria was the availability of investment capital for highly leveraged individual real estate purchases (Wyman, 2011). There was 100% financing for purchase of the lot and the country club membership. That all changed in 2007. With the downturn of the economy in 2006, this buying frenzy peaked and then plummeted as real estate values and sales declined. Over the past three years, average annualized sales have decreased by two thirds. The results would be even worse without the release of some premium waterfront property in 2008, which masked the sales decline (Wyman, 2011).

The situational analysis is as clear as the water in Lake Keowee. The golf oriented real estate development business model has changed. The market has changed. With the real estate values decreasing and the cash requirements to finance real estate purchases increasing, launch marketing sales techniques and the real estate speculators who drove those inflated sales have gone the way of the dinosaurs. While the target market for buying a high-end vacation, second or retirement homes is unchanged, the real estate speculation component is no longer driving sales. The target market is much smaller, because the consumers' psychographics and buying behavior have changed. Buyers are no longer looking for a short-term capital gain; rather, they are looking for a new value proposition that can be sustained over the long-term regardless of the changing market conditions.

Thompson admitted that the success that they enjoyed during the first six years was due to a number of factors such as, "First, we had a great piece of ground with mountain views and a spectacular deep water lake; second, we had a great group of investors who weren't looking for an overnight return on investment, which is very important with the changes in the economy and real estate market; third, the investors all believed in what we were trying to create, which is simply a family oriented neighborhood community (and, it didn't hurt if they were Clemson fans); and, last but not least, is that we had good timing and some luck." Thompson continued, "I am not so sure that we could have made it if we had started a little later. We were fortunate to get the sales before the market downturn. We still have a lot of real estate to sell, but we have been able to fund the development of the amenities as needed and will be able to weather

the changing climate in the real estate business. The question now is how we will do this given the new market conditions It will probably mean that we should make some changes in the marketing, product mix and price structure but without compromising the original development concept."

Orender, the former president of the PGA, said that he always made it a point to only build the type of golf courses that could be economically maintained and that were fun for the average golfer to play. Orender said that "This is easier said than done, because the average golfer is really not a very good player and thinks that he wants a tour course with fast greens and high roughs, but that type of golf course is not very much fun for them to play given their golfing skill level;" and, he added, "The only time that I ever developed a more difficult golf course was when I thought that the golf course was going to host a PGA Tour event. We never hosted that tour venue, and that golf course is the least popular and profitable golf course that I have owned and operated."

Delozier, of Global Golf Advisors, shares these sentiments after having developed 27 golf courses and operated 20 golf courses for Pulte Homes. Delozier said that "Much of what was built in the 1990s just didn't make much business sense. Everyone was focused on the high-end market, building golf communities that are not economically viable and can't carry the debt service. It was a house of cards that tumbled down when the real estate speculation could no longer fuel the fire." He continued and stated that "The middle market was overlooked, which is where we saw the opportunities. No big name architects, no big budgets…we built mid-market products that were affordable and a good value for our target market."

Walker, who for over 35 years has been involved in the design of 130 golf courses, explained that there was another justification for making the golf courses longer other than to "Tiger Proof" them, "There are more premium priced lots on golf courses when the golf holes are longer, particularly, when the course has returning nines or a continuous 18-hole design. If there are fairway lots on both sides, it enables the real estate developers to sell more premium priced lots on longer length golf holes. For example, a 470-yard long single fairway golf hole has four more 125-foot wide fairway lots compared to a 400-yard par four hole. It's simple math and smart business."

McCumber, chairman of McCumber Golf and co-golf course designer with his brother, PGA Tour professional Mark McCumber, was outspoken in his criticism of the United States Golf Association (USGA), stating that "The governing body of the golf has allowed advancements in golf equipment technology that have undermined the integrity of the game and the golf courses." McCumber explained that "It's obvious to everyone how much farther the tour players today are hitting the golf ball compared to how far the tour players used to hit the ball. Mark won 10 times on the PGA Tour. In his prime, he was considered a long hitter. You can look back on any of his wins, such as the two times that he won at Doral in 1979 and then in 1985, and see how the golf course played then and how it is playing now. They stretched the courses out to the max and built new tees, but the tour players today are playing a different game, because the tools of the trade have changed and transformed the game. For that, I blame the USGA. They haven't done

their job in protecting the integrity of the game by controlling the advancement of golf equipment technology."

Orender is less critical of the USGA saying that "The average golfer needs all the help he can get from the new technology. I always make the time to go out on one of our golf courses and just watch the golfers play. While I think that the USGA has let technological advances get out of hand, I hold the developers and to some extent, the golf course architects as being ultimately responsible for the fix that the industry is in today." Orender said that there was certainly plenty of blame to go around, "But, no one held a gun to anyone's head and said that they needed to build or design a tour caliber golf course. The developers built what they believed would sell real estate. The architects all vied for those big projects with the big budgets for the recognition and accolades they would receive in designing something so grand. If those developers where planning on operating those golf courses after they sold the real estate, I suspect that the golf course might not have been so grand, simply because it could not be profitably operated."

Fazio agreed with Orender, but had a different take on the controversy, "As a golfer, who was once a seven handicap and is now an 11, I need the extra distance that the technology offers. I don't hit the ball as far as I use to hit it, and have even moved up to the shorter tees, because it's more fun to make pars and birdies. We recently created some new tees at Pine Valley for both the long and short hitters. The game can accommodate both."

The Golf Courses Are Too Difficult

The length of a golf course is related to its difficulty. Golf courses that are famous for their difficulty are usually more highly regarded, which explains why the developers fostered their development. When asked how advancements in golf equipment technology has impacted golf course design, Walker responded, "With the golf ball going so much farther, we have needed to lengthened the golf courses, which is fine for the pros, but that has not worked out very well for the average golfers… not just because they don't hit the ball as far, the modern golf course designs require shot making skills that most golfers just don't have."

Walker then explained how the turning point on a dogleg hole was about 240 yards in the 1970s compared to about 260 yards some 20 years later, which doesn't work for golfers playing the forward tees because they can't reach the turning point in the dogleg. This leaves them with a more difficult (and longer) shot to the green. This is a complicated concept for a non-architect to understand, so Walker offered another application of this concept that even non-golfers could understand, "Most golfers need to be able to bounce their ball onto the green. They cannot carry a shot 125-yards across a lake or over some looming sand bunker and then stop it on the green. Furthermore, these types of golf course designs cost more to build and maintain."

McCumber added that "Golf's current downturn is not just one thing; it's a perfect storm of misguided intentions and outright stupidity. The USGA has to take some responsibility for allowing technology to outmode golf's fields of play. The developers were motivated to build longer and tougher golf courses to challenge the pros who were

hitting the golf ball so much farther. The problem is that the average golfer could not use that technology to the same advantage. So, when the PGA Tour event was over, the members of the golf course were faced with having a golf course that was too long and maintained in a manner that was simply too difficult for the average golfer to play." McCumber then added that, "No one is talking about it, but a big issue is how those golf courses are maintained. The greens are too firm and fast. The roughs are too high and the fairways are too narrow. It's nuts. Regardless of which tees the golfers play, if the golf course is maintained like a typical PGA Tour event, it's going to cost more to play, the golf course will be too tough and it will take five hours or more to play a round of golf. Thank you, USGA."

Golf Takes Too Long To Play

All of the developers and designers agreed that golf takes too long to play, and everyone agreed that the principle reasons were the length, difficulty, design and maintenance of the golf courses. McCumber noted how the maintenance of the golf course affects its playability, "If the fairways are narrow, the roughs are thick and mowed at a higher length, the golfers are going to spend a lot of time looking for their golf balls. If they cannot find their golf ball, according to the USGA rules, they have to return to their previous shot and replay it taking a one stroke penalty, which will further slow play. If there are a lot of hazards on the course and the greens are firm, the golfers will take longer to finish playing the golf course. It's that simple."

To illustrate this point, this researcher recounts playing a round of golf in June of 2011 with Covington, who had developed the Fazio designed Thornblade Country Club

in Greer, South Carolina, which annually hosts the PGA Tour's "Nationwide BMW Charity Pro Am" in April. The greens were firm and fast, the fairways were narrow and mowed very low, and the roughs were thick and cut very high. By the time we had reached the 12th tee, we had spent about three hours on the golf course looking for golf balls in the roughs and slashing our way around the golf course. Since I was Covington's guest, I did not want to be critical of the golf course maintenance, but asked why the golf course was still maintained for the play of a PGA Tour event. Covington's reply was that in two weeks, Thornblade would be hosting an American Junior Golf Association tournament. So, in order to make the golf course a severe test for junior golfers, the membership at Thornblade had to endure playing conditions that made the golf course more challenging and take too long to play. To quote McCumber, "It's nuts."

Weed also addressed the time issue in stating that "There are a number of factors that cause slow play. There are some things that the USGA should do. There are some things that the golf course professionals and golf course superintendents should do, and there are some things that the golf course designers can do." Weed continued, "First, the USGA should consider making some rule changes. I could never understand why the penalty for a golf ball lost in a water hazard is different from a golf ball hit OB (out-of-bounds); or, for that matter, why the penalty for a ball hit in a lateral hazard (i.e. a creek or stream) is different from a lost ball. Making a golfer go back to the previous shot after an OB or lost ball slows play and it's unfair. If we can trust the golfers to determine where the golf ball is to be played for hitting a ball in a water hazard or lateral hazard, why can't we do the same for an OB or lost ball?"

Weed is also a certified golf course superintendent and a golf course operator, and notes that "There is no reason to maintain a golf course like they do for a PGA Tour event. Those guys play a different game and it is costs too much to maintain those playing conditions. Most golfers want to be able to find their golf ball in the rough and be able to hit their next shot towards the green… they do not want to chop something sideways back to the fairway. Most golfers don't want to hit a shot from a tight lie in the fairway that is groomed for the pros, they want a little "fluff" under the ball. And, most golfers don't want to putt on green linoleum… they want a smooth surface and they want the greens to be a reasonable speed. In actuality, it is less expensive to give golfers the kind of golf course that they enjoy playing, and it will reduce the time that it takes to play a round of golf." Weed concluded, "As a golf course operator, I want to give my golfers a course that they enjoy playing. As a golf course designer, there are a number of things that can be done to reduce maintenance costs and enhance the playability of a golf course, which will foster sustainable golf course development."

Sustainable Golf Course Development

Hall of Fame golfer, Norman, talked extensively regarding the role that sustainable development must play to ensure the future of the game and the economic vitality of the golf industry. Norman, who chairs the Advisory Council for the Golf Course Superintendent's Association of America (GCSAA's) Environmental Institute for Golf, said that his golf course design philosophy focuses on sustainability in the broadest sense of the concept, "When you talk about golf course sustainability, you are talking about more than just environmental sensitivity. These are very important considerations,

but it would be a mistake to think that is the end-all of the discussion. Golf courses are often the centerpiece of a community, and golf courses have both an environmental and an economic impact. To the first point, the environmental impact needs to be minimized; and, to the second, the economic impact needs to be maximized. There are no conflicts of interests here. Golf courses are both an environmental and economic asset. Unfortunately, golf just has not done a very good job of telling its side of the story."

As the interview progressed, Norman noted that "There have been many missed opportunities to get this point across. Golf is not the villain. Golf does so much good for the environment and the communities they serve. We just need better public relations. For example, when it was decided that golf would be in the 2016 Olympics, and that a new golf course would be built in Brazil for the games, the golf industry should have done everything possible to make sure that the golf course built would be a model for sustainable golf course development. Since there is so little golf played in Brazil, we cannot expect them to know what to do. That is the focus of my bid to design the golf course; however, I don't know what the criteria for that course design will be."

Norman's message should be heard, but few are listening because most do not know that there is a problem, which begs the question for more research. For example, industry insiders and those in the golf course and real estate business know that the number of golfers and golf rounds are down; and, golfers may have noticed some golf course closings in their area, or that there are fewer club members and/or their dues may have increased. But, few make the connection between the change in the nature and type of golf courses built (or renovated) in the 1990s, to the higher cost in playing golf, the

length and difficulty of the golf courses and the increased time that it takes to play a round of golf.

5.4 Findings

This qualitative study focused upon explaining how and why the nature and type of the golf courses built or renovated in the 1990s has changed. Not surprisingly, the consensus view among the developers and architects was that golf communities that had big name architects and that were famous for their difficulty led to the development of golf courses that were more costly, challenging and took longer for the average golfer to play. Interestingly, even the developers of golf courses that did not have a real estate tie-in believed that they needed to create a "country club for a day" product that was competitive with the high-end real estate golf courses; and, many of the existing private and public golf courses felt the same and followed suit, which was confirmed in the NGF *Pace of Play* study.[25]

The developers knew that if their developments had a famous designer and a reputation for its difficulty that it would enable them to sell real estate lots at higher prices. The architects knew that if they designed a golf course that might make its way onto the *Golf Digest* "Top 100" list, it would enhance their reputation as a designer and the fees that they could command. As a result, the golf courses built in the 1990s were more costly, more difficult and took longer for the average golfer to play. This new standard for excellence snowballed and fostered the development of golf courses that

[25] See Appendix B. NGF *Pace of Play* study.

were not economically viable because the golf courses did not appeal to their customer base.

Also, the developers were motivated to build longer golf courses for economic reasons, because longer golf courses had more premium priced fairway frontage lots. Four more lots on a par four hole could generate more than million dollars in real estate sales. When asked why the golf course developers built longer golf courses, many pointed to how far the pros on television were hitting the golf ball and felt that the golf courses needed to be longer to protect the integrity of the golf courses from future technological advances in golf equipment. Many of the developers and architects cast blame on the USGA for the abrogation of their primary responsibility as golf's rule making body to protect the integrity of the game and the golf courses. One golf course architect who asked to not be quoted stated that the USGA put its head in the sand and allowed advancements in golf equipment technology, because it was worried about the costly litigation that it would have with the golf equipment manufacturers.[26]

Based upon this study, there are a number of reasons why the 1990s vintage golf courses cost more to play; were longer and more difficult; and, took too long to play. It is fair to say that the real estate developers and the golf course architects had mutual interests in the development of high end and high profile golf communities. The

[26] In the late 1980s and early 1990s, the Ping Company sued the USGA for $100 million and the PGA Tour for $200 million regarding the rules pertaining the width of the grooves on an iron clubface. Both cases were settled out of court, but it was generally understood that Ping received compensation for its legal fees and related costs, as well as some accommodations in the USGA rules that would allow for the Ping iron clubs to be used in USGA and PGA Tour competitions

developers built golf courses that would provide a higher ROI on their real estate lot sales; the architects wanted to have their designs on the *Golf Digest* "Top 100" list.

In the wake of the golf community development euphoria in the 1990s, no one envisioned that the golf industry would inherit a large number of unsustainable golf courses. It turned out to be a self-fulfilling prophecy. What the golfers saw on television were lush green stretches of perfectly manicured turf, and what they heard from the golf commentators were praises for the pristine conditions and difficulty of the golf courses. This has become the standard of excellence for golf courses in America today. This is what the golf course developers and architects revealed in the interviews in explaining how and why golf's built environment has changed since the 1990s, as well as offering some insight regarding the future of the game and golf community development.

CHAPTER SIX

FUTURE GOLF AND REAL ESTATE DEVELOPMENT

6.1 Overview and Opportunities

The golf course development boom that occurred during the 1990s was followed by a bust that signaled a forthcoming change in the golf community development business model. The idea that "you can't lose money in real estate," drove investor speculation and inflated the real estate investment bubble. When the bubble burst, real estate values deflated along with any prospects for a substantial return on investment in the foreseeable future. As Thompson stated regarding future buyers of real estate at his development, "Today's real estate buyers at the Reserve are not looking to make money. They just don't want to lose money. They might be looking for a second home for their family. Maybe it's a vacation or a retirement home. The difference today is that what's driving their decision isn't the prospect of having a ROI; rather, their focus is on the value and utility of that investment."

With the downturn in the economy and the real estate market, it is evident that Fraser's development concept is getting a makeover. Reed described the future golf community development in terms of being both a challenge and an opportunity, "Even in a steep decline like we have had, there are opportunities… if you know where to look. There is a lot of unsold inventory out there with the infrastructure in place that can be acquired very reasonably; however, the real value in that opportunity is what you make of it. You cannot expect to be successful just because your cost basis is lower. You can lose

money regardless of what you paid for it if you don't create a new value in that product, and if you are not offering something that the customers want to buy. You must deal with the new realities in the marketplace, which may require that you redefine your product as well as redevelop, remarket and re-price the offering."

There are other "market realities" that also must be considered. For example, Wyman and Sperry (2010) suggest that water views are the preferred locations for real estate buyers. This spatial hedonic study focused on pricing differentials for various types of views for residential lots and found that water views are the preferred locations for real estate buyers. This does not mean that there will be no golf community developments in the future, but it is safe to say that there will be fewer golf courses being built as the lead amenity in many new master planned communities. There are a few master planned communities that have either deemphasized the golf course as the main attraction, or have eliminated the golf course as a major amenity for the development.

6.2 Future Golf Community Development

Over the past six years, the number of golf course closings has increased while the number of golf course openings has decreased. Therefore, it looks like there is not going to be much new golf course development in the foreseeable future so the focus for developers and golf course architects will be on the redevelopment of existing golf courses. Reed commented that "There's a great deal of unsold inventory out there, and before developing any new projects, it makes business sense to redevelop existing golf communities that can be acquired or joint ventured."

Weed added, "We developed too many unsustainable golf courses that are too costly to operate, not much fun and take too long for the average golfers to play. Consequently, there is a great deal of redesign and redevelopment work in transforming that unsustainable inventory into something that makes business sense for ownership." Weed continued, "With 157 golf courses closing last year (2011) and only 19 golf course openings, there won't be much new design work… and this a trend that will likely continue for some time, with potentially another 1500+ courses closings throughout the country before the market comes back into equilibrium. In addition to the unsustainable golf courses built in the 1990s, it is clear that the country clubs of the 50s, 60s and 70s need to be retro-fitted to better cater to the needs of today's and tomorrow's golfers."

To follow are a few examples exposing how real estate developers and golf course architects are contending with the changing economic and market conditions.

- *Timberlake Golf Club, Chapin, South Carolina* – Do it Yourself
- *The Reserve at Lake Keowee, Sunset, South Carolina* – Remarket and Reposition
- *Nocatee, Ponte Vedra, Florida* – No Golf
- *The Deltona Club, Deltona, Florida* – Repurposing: The Weed Business Model
- *Hampton Hall and Hampton Lakes, Bluffton, South Carolina* – Water versus Golf

Do it Yourself

Timberlake Golf Club, Chapin, South Carolina is a novel and potential business model for golf community redevelopment. "With dozens of golf courses closing nationwide because of failed real estate developments, the Timberlake club is an example of a new model in the industry. Rather than watch home values plummet as a lush golf course is abandoned, nearby residents are banding together to buy the golf course – even if it means running it themselves," according to Pennington, who touts how a group of 300 Timberlake members have banded together to buy their country club near Columbia, South Carolina (Pennington, 2012, A-1).

As seen in Figure 6.1, the new member/owners will be doing much of the work themselves, from working on the golf course maintenance crew to other support roles in the golf course operation, and they have explained their reasons as being, "The golf course was in danger of closing. It's not a golf community without a golf course. We had to do something. The economic reality is that we had to protect our lifestyle and investment" (Pennington, 2012, A-1).

Figure 6.1: Timberlake's new owners roll up their sleeves.
Photo credit: Mary Ann Chastain for *The New York Times*

About 70% of the Timberlake membership is retired, which is not unlike many other golf communities in the Carolinas, Georgia, Florida, Arizona and Nevada. This suggests that there may be many more sweat equity opportunities for retirement golf communities that find themselves in a similar situation. Pennington estimates that there may be as many as 400 or so golf clubs that may choose this course of action to stay afloat. Often, to stay open the private clubs will open their doors to the public to generate additional revenues. However, there are no guarantees that this strategy will work for all and Pennington identified a number of golf courses, such as "Northgate Golf Course, a top rated layout in Reno, Nevada, that closed in 2009, is now overgrown, more a home to bunnies than to bogeys" (Pennington, 2012, A1).

Remarket and Reposition

The Reserve at Lake Keowee, Sunset, South Carolina is a 3,900 acre water, golf and mountain real estate development in the foothills of the Smokey Mountains. From 2000 through 2006, over 600 lots were sold generating more than $200 million in sales; so, this high end family oriented real estate development is financially sound. However, without the past frenzy and real estate speculation, Thompson must consider broadening the base of potential buyers who he believes are looking for value and a family lifestyle, which will require a different marketing strategy and product mix. It is likely that there will be greater emphasis in promoting the "Reserve" as a destination "stay and play" residential community, because the second home and retirement market has changed. There is still a market for a high-end product, but it is likely that the type of homes built will have smaller square footages, be more reasonably priced and less costly to maintain.

Figure 6.2 presents two photographs that appear on the Reserve at Lake Keowee website, which reflects the emphasis on the Keowee lake amenity.

Golf is not the featured amenity. Instead, the emphasis is on the variety of amenities and recreational activities for the entire family to enjoy. Lastly, the Reserve at Lake Keowee will emphasize and invest in the promotion and development of its waterfront and view real estate lots, because of their broader appeal and greater financial return.

Figure 6.2: The Reserve at Lake Keowee.
Photo Credit: http://www.reserveatlakekeowee.com/

No Golf

Nocatee, Ponte Vedra, Florida is a mixed use, 13,000+ acre development near Jacksonville, Florida. Instead of putting a golf course in the development, the developers have incorporated nature preserves, trails, parks, water views, schools, shopping, community centers, even a water park as featured attractions in this new residential community (Figure 6.3).

Figure 6.3: Nocatee water park family oriented amenity.
Photo Credit: http://www.nocatee.com/recreation/splash-water-park.aspx

This new master plan community is located in what is known as the "golf capital of the world" with the PGA Tour national headquarters, the World Golf Foundation and Hall of Fame, the Tournament Players Club and world famous Sawgrass Country Club all located nearby. Interestingly, the developers have decided to not include golf as an amenity even though they have approval for two golf courses.

This is significant because the master developer of Nocatee, the PARC Group, has developed many of Northeast Florida's finest golf course and country club communities including: Pablo Creek Reserve, Reedy Branch Plantation and Marsh Creek Country Club. The PARC Group was also recognized by the Florida Homebuilders Association in 2008 for their environmental efforts in Nocatee and won awards for Best Green Community of the Year and the Best Master Planned Community of the Year. Therefore,

the decision for these very sophisticated developers to not have a golf course may be indicative of the direction for future golf course real estate development.[27]

Repurposing: The Weed Business Model

The Deltona Club, Deltona, Florida is an 18-hole private club that was built in 1964 and was on the verge of bankruptcy when it was purchased by an investor in 2004.

Where Weed departs from many of his golf course design colleagues is that he is not waiting for the redesign jobs to come his way; instead, he has been proactive in promoting a redevelopment concept that he calls "Repurposing." The gist of the idea is to carve out underutilized acreage from a golf community development for some new real estate development, which will fund the redesign of the golf course and the redevelopment of other amenities giving a new life line to the real estate development.

To follow is a summary description and illustrations of the "Repurposing" of The Deltona Club. Figure 6.4 is a "Before" photograph of the original golf community. Figure 6.5 illustrates how the new land plan created a 17-acre development parcel for 300 age-restricted condominiums, which funded the $4.0 million reconstruction of the golf course and the creation of a profitable daily fee golf course.

[27] The source for this information was the Nocatee Ponte Vedra, Florida website: www.nocatee.com.

Figure 6.4: Aerial photo of "The Deltona Club" golf community.

Photo Credit: Bobby Weed

Figure 6.5: Reconfigured illustration of the "The Deltona Club" golf community.

Photo Credit: Bobby Weed

Apart from the additional real estate development that will generate more business for the golf course, the golfers now have a golf course that is fun and much more interesting to play. Figures 6.6 and 6.7 show the “before and after” pictures for the 11th hole at The Deltona Club.

Figure 6.6: The 11th hole at The Deltona Club (Before).
Photo Credit: Bobby Weed

Figure 6.7: The 11th hole at The Deltona Club (After).
Photo Credit: Bobby Weed

6.3 Water versus Golf

The value of water versus golf amenities in the planning, development and marketing of a master planned community was a difficult business decision for Reed, who had successfully developed a number of high end golf communities in the Hilton Head area. This is a tale of two projects; both were about 1,200 acres and located next to each other in Bluffton, South Carolina. The first was Hampton Hall, which opened in 2001 at the peak of the golf course development boom period and featured an 18-hole Pete Dye designed golf course. The real estate sales were strong but started to slow when the time came to develop the neighboring land parcel. Another Pete Dye course was planned and designed, but Reed was concerned about the marketability of the second golf

course community, in light of the competition with two other golf communities he was marketing as well as other competition in the area.

Reed explained, “I didn’t want to be selling against myself, and there was some tough competition in the area; so, I felt that I needed to do something different. I asked my construction cost estimators how much it would cost to put a lake in where the golf course was planned versus how much it would cost to build a golf course and its infrastructure. The lake needed to be about the same size as the golf course, and deep enough to keep the weeds out and become a water recreational asset. As it turned out, the cost for building the lake was about the same as the golf course at approximately $10 million, if we could dispose of the excavated dirt on-site. If we had to move the dirt off-site, it would cost about $17 million.”

Reed continued, “So, in 2005, I decided to have water rather than the golf course become the featured community amenity and it proved to be a very good decision.” One of the key factors in this decision was the maintenance cost of the lake versus the golf course as Reed explained, “It cost about $300,000 to maintain the lake versus over $1,000,000 to take care of the golf course. The HOA takes care of the lake maintenance cost, but I would be responsible for the golf course cost as part of the country club operating costs that I must subsidize until I am able to sell the real estate and eventually sell the golf course.”

Figure 6.8 “Hampton Hall” and Figure 6.9 “Hampton Lakes,” illustrate how this was accomplished. While the development density was greater with Hampton Hall, the value of the water front lots was much higher at Hampton Lakes. With greater revenue on

a per lot basis and with comparable development costs, the project was more profitable. Reed noted, "With Hampton Lakes, I had something new and different to sell. We focused on creating a more casual setting and a family friendly community. You can wear jeans in the clubhouse restaurant and bar. We built a water park, a fitness facility, an expansive fishing pier and boat dock area, tackle shop and gas station, a general store. We even stocked the lake with large-mouth bass. Hampton Lakes had everything you might get at a country club, but without the snobbery. And, if the homeowners at Hampton Lakes wanted to play golf, they had access to Hampton Hall."

Figure 6.8: Hampton Hall, Bluffton, South Carolina
Source: Reed Development (2001)

Figure 6.9: Hampton Lakes, Bluffton, South Carolina
Source: Reed Development (2005)

In the final analysis, it is reasonable to think that future golf community development will be different from what it once was for a number of reasons including:

- The Fraser golf community development business model appears to be broken and a new paradigm has yet to emerge.
- There is a large inventory of golf real estate inventory that needs to be repositioned, remarketed and sold, which will influence the nature, type and number of new golf communities that will be developed in the future.
- With the contraction in the supply of golf courses and demand for golf, it is assumed that the demand for golf communities will decline commensurately; however, this is a mistaken notion because the percentage of the real estate buyers who play golf is not relevant to the real estate developers' decision to feature golf as the lead amenity in marketing and selling real estate lots. What the developer is selling is a view and a lifestyle.
- The developers' decision to feature golf and/or other recreational amenities will depend upon the nature and type of community/club lifestyle that will most appeal to the target market for the master planned community. This may or may not include golf depending upon the marketability of golf compared to other amenities, and the anticipated risk and return on investment.
- It appears as though real estate buyers are choosing between a water view versus a golf course view and the ambiance and lifestyle associated with each. The degree of the developer's marketing emphasis or exclusion of one over the other will impact the consumers' perception of the community lifestyle being offered.

- Developers view the water view as being preferable because it commands a premium over the golf course view. While there are often both water and golf views in a golf community, the decision to offer one versus the other is more of a matter of marketing emphasis in the selling of the ambiance and lifestyle of the community rather than the appeal and the financial return of golf versus the waterfront.
- The cost of maintaining lake(s) versus a golf course is substantially less, and in some instances, that cost may be carried by the Home Owners Association (HOA).
- Future golf community development is dependent upon a myriad of factors ranging from adherence to the historical view that golf courses are the preferred amenity for enhancing values and selling real estate, to the new view that there are alternatives to the original Fraser golf community development business model that may better meet the needs of prospective buyers in a changing marketplace. These real estate developments may or may not include a golf course.

CHAPTER SEVEN

CONCLUSIONS

7.1 Introduction

The history of the golf's built environment in the U.S. has reflected the changing face of the game in terms of the number, type and kind of golf courses built, as well as the demographic profile of those playing the game. Since 2000, the golf industry has experienced significant declines in the key barometers of its economic wellbeing as defined by the decrease in the number of golfers, rounds played and the number of golf courses. This trend is likely to continue for the foreseeable future as Beditz remarked in a presentation at the Clemson University, "The downward trend in golf participation and the contraction in the golf course supply will continue for another seven to 10 years depending upon the timing of the economic recovery" (Beditz, 2012). As a result, the golf industry is in the midst of a maelstrom in the viability and sustainability of its built environment.

The literature review and situation analysis led to the formulation of the research hypothesis that…"The nature and type of courses built or renovated during the 1990s golf course development boom were more costly, longer, more difficult and took longer to play compared to the golf courses built during the previous golf course development boom periods in the 1920s and 1960s."

In order to determine if there had been a paradigm change in golf's built environment during the 1990s, an analysis of the NGF Golf Facility Database was

undertaken. The key variables of interest that characterized the nature and type of golf courses built were identified in order to provide data to test the hypothesis that the courses built in the 1990s were significantly different than the courses built in the other two golf course development boom eras. The variables of interest to test the hypothesis included the cost to play, the total length of the golf course (yardage), and the USGA Slope and Course Rating from the NGF Golf Facility Database. In order to fill some information gaps in the NGF database, a supplemental on-line survey, the NGF *Pace of Play*, was conducted to gather information regarding the time to play a round of golf, as well as to identify any golf course renovations that may have been made to make the golf courses longer and more difficult.

The quantitative analysis included both a univariate and a bivariate ANOVA analysis. A qualitative study was undertaken to explain how and why golf's built environment had changed, which was based upon the responses from 12 in-depth expert interviews with golf community developers and golf course architects.

7.2 Research Findings and Conclusions

The analysis of the NGF Golf Facility Database and the NGF *Pace of Play* survey supported the research hypothesis that "The nature and type of courses built or renovated during the 1990s development boom were more costly, longer, more difficult and took longer to play compared to the golf courses built during the previous golf course development boom periods in the 1920s and 1960s."

The univariate analysis described, discerned and interpreted the descriptive data to explain how the group means for the variables of interest differed for the golf courses

built during the 1990s, compared to the golf courses built during the 1920s and 1960s eras. This analysis confirmed that the 1990s vintage golf courses were:

More costly: The golf courses built in the 1990s had an average 18-hole greens fee of $59 per round compared to $45 and $47 per round respectively for the vintage 1960s and 1920s courses.

Longer in length: The average length of the golf courses built in the 1990s is 6,699 yards; the average length of 1920s vintage golf courses is 6,397 yards, which is 302 yards less; and, average length of 1960s vintage golf courses is 6,468, which is 231 yards less than the vintage 1990s courses.

More difficult: The distribution of the group means for USGA Slope and Course Rating are similarly revealing in depicting how the golf courses built in the 1990s were more difficult than the golf course built in the 1920s and 1960s.

USGA Slope: The mean Slope rating for the golf courses built in the 1990s is 129, which is significantly higher than the group means for the 1920s vintage golf courses built at 123.2 and the 1960s vintage golf courses at 121.7.

USGA Course Rating: The mean Course Rating for the golf courses built in the 1990s is 72, which is significantly higher than the group means for the 1920s vintage golf courses at 70.5 and the 1960s vintage golf courses built at 70.6.

Takes too long to play: The mean time for a foursome to play 18-holes during the peak season for the vintage 1990s courses is 267 minutes (four hours and 27 minutes), which is significantly higher than the group means for the vintage 1920s courses at 247

minutes (four hours and seven minutes) and for the vintage 1960s courses at 258 minutes (four hours and 18 minutes).

The ANOVA tested the null hypothesis that the group means for the golf courses built during the 1920s, the 1960s and the 1990s development decades were equivalent. The research results revealed that there were statistically significant differences in the group means for the golf courses built in the 1990s compared to the golf courses built in the 1920s and 1960s. Therefore, the null hypothesis is rejected and the results support the research hypothesis.

The in-depth expert interviews revealed that the real estate developers and the golf course architects were motivated to develop more costly, longer and more difficult golf courses, because it enabled the developers to enhance real estate values and increase sales, and it enabled architects to both enhance their professional reputations and to increase the fees for their golf course design services. These results provide a partial explanation for how and why golf's built environment has changed in the 1990s and may have contributed significantly to the disastrous decline of golf demand in the 2000s.

7.3 Research Strengths and Limitations

The strength of this study is the quality of the data provided in the NGF Golf Facility Database, which is a comprehensive listing of all U.S. golf courses and contains the critical descriptive statistics needed for this research. Specifically, this study focused on five descriptive statistics defined as: cost/greens fee; length/yardage of golf course; difficulty of golf course as defined by the USGA Slope and Course Rating; and, the time that it takes a foursome to play a round of golf.

One limitation of the research is that not all of the information needed for this research was available from the NGF database, which contained the first four variables of interest. The fifth variable, the time that it takes to play a round of golf was obtained from the NGF *Pace of Play* on-line survey of golf course operators conducted in March of 2012. In addition to the pace of play questions, the NGF asked a number of other research questions including the identification of any golf course renovations made to make the course longer and/or more difficult, and whether or not the golf course was tied to a real estate development.

The research issue relates to the reliability and applicability of the data derived from the NGF *Pace of Play* survey due to the low response rate of approximately 7%, which is typical for on-line surveys of this type. The study universe for 18-hole regulation length golf courses is 9,470. The NGF had email addresses for 9,100, and 637 surveys were returned. According to the Central Limit Theorem, the number of respondents is more than 30, so we can assume a normal distribution, but this distribution may be skewed (Ott and Longnecker, 2010). While the survey respondents were geographically representative and did match up with the mix of golf courses by type (private, daily fee, resort, municipal, etc.), there could be some bias or error in the survey results. The low response rate from the NGF *Pace of Play* survey could suggest that "…the sample measurements used to make inferences about certain characteristics of the population" may not be reliable for other characteristics (Ott & Longnecker, 2010, 13). This would be a major issue if this data was being used in another research methodology such as in a multiple regression analysis; however, it is of less concern because this study

is not trying to explain or predict the value of a dependent variable. Instead, the research design is to analyze the selected variables of interests and determined if they have changed overtime; therefore, the nature of the relationship, causality and/or interaction among the variables of interest are less relevant.

The hypothesis being tested is whether or not there were statistically significant differences in the group means over the three decades of interest, which was evident for all of the variables being evaluated. Furthermore, since this descriptive data is being analyzed separately, there are no issues arising from how the measurements have been determined, just so long as the calculation of the group means for the variables of interests are measuring the same thing. For example, it does not matter that the golf course length/yardage or the USGA Slope and Course Rating mean measurements are from the furthest (back) tees; it only matters that there is consistency in what is being measured so that it can be compared over time. In other words, if the group mean for the length/yardage variable for the vintage 1920s golf courses were taken from the back tees, and were being compared to the group mean for the length/yardage variable for the vintage 1990s golf courses from the middle tees, the results would be inconclusive. However, since the measurements for the length/yardage variable is from the furthest (back) tees, the comparison of the group means is meaningful.

The focus of the univariate analysis and the ANOVA statistical procedure is on how those group means have changed overtime for the 1920s, 1960s and 1990s vintage golf courses. The nature of these changes and the relationships among the variables is fertile ground for future research.

7.4 Future Research

Paradigm changes often go unnoticed because they are not recognized until well after that change has occurred and the new paradigm has emerged (Barker, 1992). Such has been the case for the golf industry, and it is the reason for this research.

The purpose of this research was to define the paradigm change in golf's built environment, describe how and why it occurred and then offer some explanation regarding the role that change may have played in the development of unsustainable golf courses. This research identified many new avenues for future research regarding the impact of the identified variables of interest (cost, length, USGA Slope, Course Rating and pace/time) on golf participation and the economic viability of golf courses and golf communities; and, importantly, this research laid the foundation for future research regarding the merits of fostering the development of sustainable golf courses.

In fact, the two ruling bodies of golf, the USGA and the Royal & Ancient Golf Club of St Andrews (R&A) have contacted the author regarding this research to see if it can be expanded upon to explore the concept of sustainable golf course development, originally suggested in Hueber and Worzala (2010). The USGA and R&A are looking into additional research that would explore the adverse impact that more costly, longer and difficult golf courses have had on golf course sustainability, as well as examine the impact of golf equipment technological advances on the integrity of the game and the sustainability of the golf courses worldwide. This research may also consider a number of remedies for an ailing industry, such as putting limits on how far the golf ball can go

under certain conditions that would ensure that Tiger Woods was playing the same game as Jack Nicklaus.

Sustainable Golf Course Development

Sustainability is often misunderstood as being synonymous with environmentalism (Kirk, 2006). The application of the sustainability concept to golf courses has been very slow in getting started, because the focus for the golf industry until recently has been almost exclusively on the ecological issues without adequate attention on the economic and societal components of sustainability. To many in golf, sustainability means that the "greens" will become the "browns." While the underlying premise for sustainable golf courses is based upon ecological concerns and the associated environmental cost savings, the primary driver for a sustainable golf course should be the creation of a product that better meets the needs of the customer and that will provide golf course ownership with a higher return on investment. So, what is a sustainable golf course?

Sustainable golf courses require less water, less chemicals and less intensive maintenance. Sustainable golf courses cost less to maintain, so it will be less expensive to operate and, theoretically, lower the cost of greens fees. Sustainable golf courses are more fun for most golfers to play, because the average golfer can hit his/her golf ball along the ground, somewhat more like how most golf courses in the U.S. played before real estate developers started building heavily watered "wall-to-wall" green vistas to sell real estate. Lastly, sustainable golf courses are more socially responsible in their use of natural resources, in how that green belt asset enhances the quality of life and well-being

of a community, as well as what can be done above and beyond what is expected by preserving nature for future generations.

Hueber and Worzala (2010) have defined a sustainable golf course that goes beyond the singular focus on the environment aspects of sustainability and embraces the broader concept that includes the economic and social responsibility dimensions. Figure 7.1 illustrates the three legs on the sustainability stool, and Figure 7.2 describes the "Three Principles of Golf Course Sustainability."

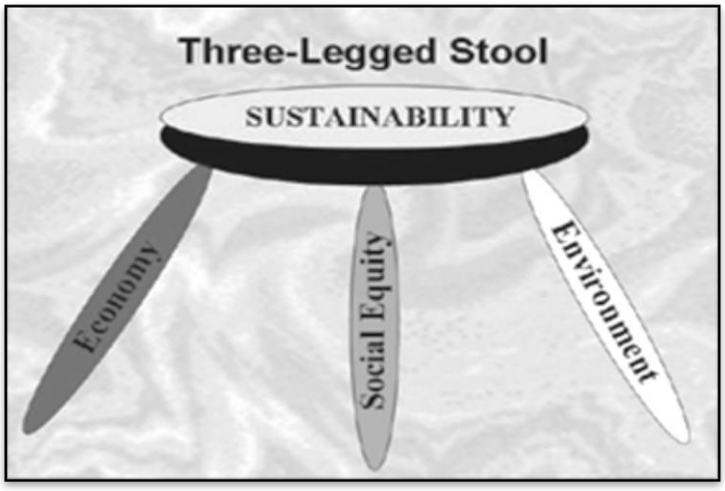

Figure 7.1: The Sustainability Stool
Illustration: public domain.

THREE PRINCIPLES OF GOLF COURSE SUSTAINABILITY:

1. Environmental **-** Sustainable golf course strive to be one with nature and cause no lasting environmental harm, which includes taking no more from nature than what is needed and that can be replenished, and by fostering biodiversity and supporting wildlife habitat with golf course maintenance "best practices" that minimize the use of irrigation, fertilizers, pesticides and other chemicals.

2. Economic **-** Sustainable golf courses are economically viable enterprises that meet the needs of its customers and provide a golfing experience that is affordable and enjoyable for the average golfer.

3. Social **-** Sustainable golf courses contribute to the social wellbeing of a community by preserving and protecting environmentally sensitive green spaces, generating economic activity, and providing recreational amenities that enhance the quality of life in a community.

Figure 7.2: Three Principles of Golf Course Sustainability.
Source: (Hueber & Worzala, 2010. 23).

While sustainability has become a ubiquitous term in society today, it is not in the lexicon of the professionals in the golf industry. At this point, there is no general understanding among golfers or golf course operators as to what a sustainable golf course is and what it would mean for the golfers' enjoyment of the game. In addition, there is no understanding of what it could mean for the economic wellbeing of the golf course business.

Given the history of golf's built environment in the U.S., it is understandable that the general public does not see the golf industry as being environmentally and socially

responsible, because it is perceived by many that golf courses selfishly or irresponsibly use limited natural resources. In today's politically charged environmental movement, the golf industry is not viewed in a favorable light. Golf's image as a rich man's game with its gated communities and oases of lavishly maintained green areas are not politically correct and accepted by individuals that are trying to "do their part" in the green movement.

While many in the golf industry believe with some justification that golf courses have been unfairly characterized as an environmental villain and a social pariah, it doesn't really matter. Public perceptions, right or wrong, can be the basis for adverse political action and overreaction to the industry. This is a critical area for research. The golf industry needs to determine the facts. How much water does a golf course use? Is that water usage harmful or helpful to the environment? The same questions can be asked regarding pesticides, fertilizers, herbicides, etc. The answers will not satisfy the critics, but it is better to deal with the facts, good and bad, as opposed to the fiction which will be slanted to achieve the oppositions' objectives.

The golf industry needs to be proactive in dealing with these realities, or it may face the more costly political ramifications of being reactive to societal concerns and the likelihood of an increase in new regulations. These proactive efforts need to be louder than words especially as it pertains to the social responsibility leg on the sustainability stool. These actions need to be substantive and penetrating in their scope in redirecting the golf industry toward sustainability.

Future research is also needed to determine if there is a link between the paradigm change in golf's built environment and the imbalance in demand and supply. Certainly, the downturn in the economy has played a critical role in this regard, which leads to more research questions. What are the ramifications of this paradigm change, and what might it mean for the game and the golf course business? If the golf industry is now offering a product that its customers do not want to buy, what can be done about it? More market and consumer research needs to be undertaken in order to understand the "disconnect" that the golf industry now seems to have with its customer base.

With the paradigm change in the nature and type of golf courses built or renovated during the 1990s, the golf industry now has a large inventory of golf courses that are unsustainable and that are not meeting the needs of its customers, average golfers. With the downturn in new golf course development, the focus should be on the redevelopment of the current inventory of unsustainable golf courses.

In the final analysis, the question must be answered, "Can an industry be sustainable if the delivery of its products/ services are not sustainable? In today's business environment, it makes dollars and sense for the golf industry to foster the development of sustainable golf courses in order to become a sustainable industry. Sustainable golf courses are environmentally sensitive, economically viable and socially responsible. The golf industry cannot be sustainable if its products are not meeting the needs of its customers and if the golf courses are not economically viable.

About 25 years ago, the golf industry appeared to be a mature business and possibly a dying industry. Golf redefined itself as a growth industry based upon research

that indicated that there would be increased demand from the Baby Boomer population as they aged and had the time, money and inclination to play more golf. This idea transformed the industry's image of its future prospects from gloom to boom. The "Course a Day" promotional initiative led to unprecedented investment into many sectors of the golf industry. The golf industry grew, and more than a golf course a day was built during the 1990s.

Deane Beman, the former PGA Tour Commissioner, who helped to successfully launch the NGF "Course a Day" promotional campaign, had another idea along the same lines over a cup of coffee with this researcher. He said, "What we need to do to rally support like we did before is to promote the idea that …We need to redevelop a sustainable golf course a day between now and the year 2020." Results from this study indicate that the golf product of the 1990s is substantially different from the courses built in the 1920s and 1960s and the redevelopment of the unsustainable golf courses could help in rejuvenating the golf industry.

Future research regarding sustainable golf course development should build upon this study's findings and other research to further define the issues in order to chart the best course for the game and the golf industry to succeed in the 21st century.

REFERENCES

Adams, R., and Rooney, J.R. (1985). Evolution of American Golf Facilities. *Geographic Review,* 75(4), 419–438.

Asabere, P.K., and Huffman, F.E. (2009). The Relative Impacts of Trails and Greenbelts on Home Price. *Journal of Real Estate Finance and Economics*, 38(4), 408–419.

Audubon International. (2007). Golf's Green Bottom Line: Uncovering the Hidden Business Value of Environmental Stewardship on Golf Courses. *A Research Project of Audubon International.*

Barker, J. (1992). *Paradigms: The Business of Discovering the Future.* New York, NY: Harper Collins Publishers, Inc..

Beditz, J.F. (2012). Golf SOS: Symposium on Sustainability. *Clemson University*: Clemson, SC., April 2.

Beditz, J.F., and Kass J. R. (2007). *A Strategic Perspective on the Future of Golf*. National Golf Foundation: Jupiter, FL.

Beditz, J.F., and Kass J.R. (2010). *Golf Business Update*. National Golf Foundation: Jupiter, FL.

Brundtland, G. (1987). *Our Common Future.* World Commission on Environment and Development. Oxford, UK: Oxford University Press.

Cornish, G.S., and Whitten R.E. (1992). *The Architects of Golf*. New York: HarperCollins Publishers, Inc.

Creswell, J.W. (2007). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*, Second Edition. Thousand Oaks, CA: Sage Publications.

Danielson, M.N. (1995). *Profits and Politics in Paradise – The Development of Hilton Head Island.* Columbia, SC: The University of South Carolina Press.

Dermisi, S.V. (2009). Effect of LEED Ratings and Levels on Office Property Assessed and Market Values. *The Journal of Sustainable Real Estate*, 1(1), 23–47.

Do, A.Q. and Grudnitski, G. (1995). Golf Courses and Residential House prices: an Empirical Examination. *Journal of Real Estate Finance and Economics*, 10(3), 261–270.

Doak, T. (1992). *The Anatomy of a Golf Course.* Short Hills: Buford Books.

Dodson, R.G. (2005). *Sustainable Golf Courses: A Guide to Environmental Stewardship.* Hoboken, New Jersey: John Wiley and Sons.

Drucker, P. (1954). *The Practice of Management*. New York, NY: Harper & Row.

Fazio, T., and Brown C. (2000). *Golf Course Designs*. New York, NY: Harry N. Abrams, Inc.

Frost, M. (2002). *The Greatest Game Ever Played: Harry Vardon, Francis Ouimet, and the Birth of Modern Golf*. New York, NY: Hyperion Books.

Golf Course Superintendents Association of America and Environmental Institute for Golf. (2007a). *Golf Course Environmental Profile, Property Profile and Environmental Stewardship of Golf Courses* Volume I. Lawrence, KS.

Golf Course Superintendents Association of America and Environmental Institute for Golf. (2007b).*Golf Course Environmental Profile, Water Use and Conservation Practices on U.S. Golf Courses* Volume II. Lawrence, KS.

Golf Course Superintendents Association of America and Environmental Institute for Golf. (2007c),). *Golf Course Environmental Profile, Nutrient Use and Management on U.S. Golf Courses*. Volume III. Lawrence, KS.

Graffis, H. (1975). The PGA: The Official History of the Professional Golfers Association of America. New York, NY: The Thomas Y. Crowell Company.

Grudnitski, G. (2003). Golf Course Communities: the Effect of Course Type on Housing Prices. *Appraisal Journal,* 71(2), 145–149.

Grudnitski G. and Do, A.Q. (1997). Adjusting the Value of Houses Located on a Golf Course. *Appraisal Journal*, July, 65(3), 261–266.

Healey, J.F. (2009), *Statistics: A Tool for Social Research*, Eighth Edition. Belmont, CA: Wadsworth Cengage Learning.

Hueber, D., and Worzala, E. (2010). "Code Blue" for U.S. Golf Course Real Estate Development: "Code Green" for Sustainable Golf Course Redevelopment. *The Journal of Sustainable Real Estate,* 2(1), http://www.costar.com/JOSRE/industryPerspectives.aspx

Kauffman, S. (2004). Supply and Demand. (*Golf Course Development InfoPacket No. 320,* Urban Land Institute Information Services, August 2004, revised January 2006), 102–103, 108–113.

Kirk, P.L. (2006, November/December). Designing the Way to Green: Environmental Design is Now Synonymous with Sustainable, or Green, Design. Washington, D.C.: ULI-the Urban Land Institute.,73–79.

Kuhn, T.S. (1962). *The Structure of Scientific Revolutions*, 1st edition, Chicago, IL: University of Chicago Press.

Laing, J. R. (1997). The Good Life. Why Golf's Prospects are Dimming. *Barron's*, G5–G8, April 21.

Leonhardt, D. (2009). A Decade with No Income Gains. *Economix*, September 10. (economix@nytimes.com).

Levitt, T. (1960). Marketing Myopia. *Harvard Business Review*.

Limehouse, F.F., Melvin, P.C., and McCormick, R.E. (2009, August). The Demand for Environmental Quality: An Application of Hedonic Pricing in Golf. *Journal of Sports Economics*, OnlineFirst, SAGE Publications, Inc., 000(00), 1–24.

Lynch, A.K. (2007). *The Golf Business During Recessions: Analysis and Perspective*. Jupiter, FL.: National Golf Foundation.

Maxwell, J.A. (2005). *Qualitative Research Design: An Interactive Approach*, Second Edition. Thousand Oaks, CA: Sage Publications.

McCarty, L.B. (2008). *Best Golf Course Management Practices*, 3rd edition. New Jersey: Prentice Hall.

McElyea, J.R., Anderson, A.G., and Krekorian, G.P. (1991, February). Golf's Real Estate Value. Washington, D.C.: ULI-the Urban Land Institute. 14–19.

Muirhead, D., and Rando, G.L.(1994).*Golf Course Development and Real Estate*. Washington, D.C.: ULI-the Urban Land Institute.

Mulvihill, D.A. (2001). *Golf Course Development in Residential Communities.* Washington, D.C.: ULI-the Urban Land Institute.

Napton, D.E., and Laingen, C.R. (2008, January). Expansion of Golf Courses in the United States. *Geographic Review*, 98(1), 24–41.

National Golf Foundation and Synovate, Inc. Golf Consumer Profile. (1986–2011). Jupiter, FL.

National Golf Foundation and McKinsey and Company. (1987). *Strategic Plan for the Growth of the Game*. Jupiter, FL.

National Golf Foundation and McKinsey and Company. (1999). A *Strategic Perspective on the Future of Golf.* Jupiter, FL.

National Golf Foundation. (2008a*).* Golf Industry Overview – 2008 Edition. Jupiter, FL.

National Golf Foundation. (2008b). Golf Industry Report: NGF's Golf Business Symposium. Jupiter, FL.

National Golf Foundation. (2008c). The Future of Private Clubs in America. Jupiter, FL.

National Golf Foundation. (2009). The Future of Public Golf in America. Jupiter, FL.

National Golf Foundation. (2011a). Golf Business Symposium. The Union League Club of Chicago. Jupiter, FL.

National Golf Foundation. (2011b). Golf Facilities in the United States – 2011 Edition . Jupiter, FL.

National Golf Foundation. (2011c). Golf Participation in the United States – 2011 Edition. Jupiter, FL.

National Golf Foundation. (2011d). Rounds Played Report. Jupiter, FL.

Nicholls, S. and Crompton, J. (2005). The Impact of Greenways on Property Values: Evidence from Austin, Texas. *Journal of Leisure Research*, 37(3), 321–341.

Nicholls, S., and Compton, J.L. (2007). The Impact of a Golf Course on Residential Property Values. *Journal of Sports Management,* 21, 555–570.

Ott, R.L., and Longnecker, M. (2010). *An Introduction to Statistical Methods and Data Analysis*, Sixth Edition. Belmont, CA: Brooks/Cole, Cengage Learning, 377-379

Pennington, B. (2005). High Tech in Golf Hasn't Lowered Average Scores. *New York Times,* May 24.

Pennington, B. (2012). Club Members Learn to Swing More than 5-iron. *New York Times*, May 27.

PGA of America andThe Boston Consulting Group. (2011). Golf 2.0 Consumer Research Summarize Need for Change. Palm Beach Gardens, FL.:*PGA Magazine*, 92(9), 46–59.

Presser, H, (2004). Review of Working in a 24/7 Economy: Challenges for American Families. Cornell University: *Industrial & Labor Relations Review*, 57(4), Available at: http://digitalcommons.ilr.cornell.edu/ilrreview/vol57/iss4/88.

Richards, L., and Morse, J.M. (2007). *Readme First for a User's Guide to Qualitative Methods*, Second Edition. Thousand Oaks, CA: Sage Publications.

Sailer, S. (2005, April). From Bauhaus to Golf Course: The Rise, Fall, and Revival of Art of Golf Course Architecture, *The American Conservative*, iSteve.com.

Schupak, A. (2011). *Deane Beman: Golf's Driving Force.* Orlando, FL: East Cottage Press.

Shackelford, G. (2005). *The Future of Golf: How Golf Lost Its Way in the 21st Century and How to Get It Back.* Seattle, WA: Revised edition, Sasquatch Books.

Silverman, D. (2006). *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction.* London: Sage Publications.

Singleton, R.A., and Straits, B. (2005). *Approaches to Social Research*, Fourth Edition. NY: Oxford University Press.

Sporting Goods Manufacturers Association. (2009a). *Sports Participation in America 2009.* North Palm Beach, FL.

Sporting Goods Manufacturers Association. (2009b). *2009 Sports and Fitness Participation Report Today!* North Palm Beach, FL.

SRI International. (2008). *The Golf Economy Report*. Menlo Park, CA: SRI International.

United States Golf Association and The R & A (2010) *2010 – 2011 The Rules of Golf RULES OF GOLF*. Golf House, Far Hills, N.J.

Wind, H. (1975). *The Story of American Golf: Its Champions and its Championships.* New York, NY: Farrar, Straus and Co.

Whitten, R. (2007). The Complete History of the Best New Courses. *Golf Digest*. (http://www.golfdigest.com/courses/bestnewcoursesarchive).

World Golf Foundation and SRI International. (2008). *Golf 20/20 Vision for the Future: The 2005 Golf Economy Report.* St. Augustine, FL.

Wyman, D., and Sperry, S. (2010). The Million Dollar View: A Study of Golf Course, Mountain, and Lake Lots. *The Appraisal Journal*, 128(2): 159–168.

Wyman, D. (2011). A Million Dollar View – A Spatial Hedonic Model Of The Reserve at Lake Keowee, South Carolina. *Doctor of Philosophy in the Department of Property, University of Aberdeen.*

Veblen, T. (1998). *The Theory of the Leisure Class*. Amherst, NY: Prometheus Books.

Yin, R.K. (2009). *Case Study Research: Design and Methods.* Thousand Oaks, CA: Sage Publications, Inc.

APPENDICES

Appendix A. NGF Golf Facility Database

National Golf Foundation Golf Facility Database (~16,000 records)

	Facility Content Description		Scorecard Content Description (80% coverage)
a.	Facility POI ID	ww.	Tee number (multiple tees)
b.	Facility name	xx.	Tee name (multiple tees)
c.	Mailing address	yy.	Tee yardage (multiple tees)
d.	Mailing city	zz.	Tee par (multiple tees)
e.	Mailing state	aaa.	Tee Slope (multiple tees)
f.	Mailing zip	bbb.	Tee Rating
g.	Location address	ccc.	Hole-by-Hole Par
h.	Location city	ddd.	Hole-by-Hole Yardage
I.	Location state		
j.	Location zip		
k.	County		
l.	FIPS		
m.	Latitude coordinates		
n.	Longitude coordinates		
o.	Phone		
p.	Toll free phone		
q.	Fax		
r.	Website		
s.	# tee stations on range		
t.	Pro shop square footage		
u.	Ownership change (true/false)		
v.	Name of primary contact		
w.	Primary contact title		
x.	Name of Head Golf Professional		
y.	Head Pro email address		
z.	Name of General Manager		
aa.	General Manager email address		
bb.	Name of Superintendent		
cc.	Superintendent email address		
dd.	Name of CEO/President		
ee.	CEO/President email address		
ff.	Management company name		
gg.	Designated Market Area (DMA)		
hh.	Metropolitan Statistical Area		
ii.	NGF Climate Region Number		
	Course Content Description		
jj.	Course POI ID		
kk.	Course name		
ll.	Course number of holes		
mm.	Hole type (reg, exec, par 3)		
nn.	Course type		
oo.	Course category		
pp.	Weekend green fee		
qq.	Weekday green fee		
rr.	Twilight green fee		
ss.	Course Par (Tips)		
tt.	Course Yardage (Tips)		
uu.	Course Slope (Tips)		
vv.	Course Rating (Tips)		
	Year Opened		
	Golf Course Architect		
	Golf Course Construction Cost (since 1989)		

Appendix B. NGF *Pace of Play* Survey Instrument and Responses

NGF *Pace of Play* Survey
March 2012

Q1. What is the typical pace of play for an average foursome at your course (for an 18-hole round) during peak time and non-peak times? (SELECT FROM THE DROP-DOWN MENUS FOR EACH OPTION)

	AVERAGE
Peak Time (e.g., weekends in-season)	4:16
Non-Peak Time (e.g., weekday afternoons)	3:55

Q2. In minutes, what is your most common tee time interval (*i.e.,* minutes between tee times)?

Avg. 8.9 / Med. 9.0 minutes

Q3. What percent of your players would you say "ride" versus "walk" the course? (ENTER NUMBER FOR EACH. MUST SUM TO 100%)

9 Holes: 59% / 18 Holes: 78%	Ride
9 Holes: 41% / 18 Holes: 22%	Walk

Q4. What are the lengths, Slopes and ratings of your most commonly played tees? [AVERAGES AMONG FACILITIES W/ 18-HOLES]

	LENGTH	SLOPE	RATING
Men	6,218	126.7	70.2
Women	5,158	120.9	69.8
Seniors	5,679	120.9	68.3

Q5. Which, if any, of the following NEGATIVELY affect the pace of play at your facility? (SELECT ALL THAT APPLY) [RANDOMIZE ALL BUT OTHER]

- ❑1 23% Water hazards
- ❑2 15% Sand traps/waste areas
- ❑3 15% Narrow fairways
- ❑4 12% Blind shots
- ❑5 57% Golfers playing tees that are too long for them
- ❑6 81% Slower playing groups (not keeping up)
- ❑7 56% Golfers looking for lost balls
- ❑8 37% Golfers stopping for food & beverage at the turn
- ❑9 41% Holes that cause a bottleneck
- ❑10 33% Cart path only policy (occasionally or always)
- ❑11 9% Tee time intervals too short (course gets too crowded)
- ❑98 17% Other (please specify) poor/inexperienced golfers not playing ready golf, tough greens, weather, distance between holes

Q6. Which, if any, of the following POSITIVELY affect the pace of play at your facility? (SELECT ALL THAT APPLY) [RANDOMIZE ALL BUT OTHER]

- ❑1 29% Not many water hazards
- ❑2 22% Limited sand traps/waster areas
- ❑3 39% Generous fairways
- ❑4 35% Short/non-existent rough
- ❑5 46% Good ranger program
- ❑6 37% Good customer education
- ❑7 68% Encourage golfers to play ready golf
- ❑8 11% Special pace of play program (e.g., pace captain, forecaddies, etc.)
- ❑9 46% Encourage golfers to play shorter tees
- ❑10 28% Longer tee time intervals
- ❑98 11% Other (please specify) GPS, tree trimming/pruning, reposition/remove groups,
  Shorter distance between tees, pre-order prompt before turn

Q7. How do you monitor pace of play at your facility? (SELECT ALL THAT APPLY) [RANDOMIZE ALL BUT OTHER & DO NOT USUALLY MONITOR]

- ❑1 9% GPS
- ❑2 70% Ranger(s)

❑3 60% Time out/time in
❑4 10% Other (please specify) Turn time, professional staff, golfer/peer notification, pace guide on cart
❑5 10% Do not usually monitor

Q8. Approximately how many rounds are played at your course during…?
(ENTER ROUNDS INFORMATION FOR EACH)

	AVERAGE ROUNDS	AVERAGE ROUNDS	AVERAGE ROUNDS
	9 Holes	18 Holes	27+ Holes
A busy weekend day (in season)	159	191	249
An average weekend day (in season)	124	152	202
A busy weekday (in season)	132	159	210
An average weekday (in season)	91	123	165

Q9. Approximately how many total rounds are played at your course in a year? (ENTER ROUNDS)
Avg. 9 Holes: 20,720 / 18 Holes: 29,250 / 27+ Holes: 41,720 total rounds

Q10. What year was your course first opened? (ENTER YEAR)
_____ ❑1 Unsure

Q11. Have there ever been any major renovations at your course? (SELECT ONE)

		Re-%	
❍1	53%	54%	Yes [IF YES: CONTINUE; OTHERWISE SKIP TO Q14]
❍2	45%	46%	No
❍3	2%		Unsure

[AMONG SAMPLE WHO MENTIONED COURSE WAS RENOVATED]
Q12. Was the course lengthened? (SELECT ONE)

		Re-%	
❍1	39%	43%	Yes → By approximately how much? Avg. 481 / Med. 300 yards
❍2	52%	57%	No
❍3	9%		Unsure

[AMONG SAMPLE WHO MENTIONED COURSE WAS RENOVATED]

Q13. Was the course made more difficult (*i.e.,* did the Slope/rating increase)? (SELECT ONE)

		Re-%	
❍1	51%	54%	Yes
❍2	43%	46%	No
❍3	6%		Unsure

Q14. Finally, which category best describes your role with your facility?

❑1	7%	Owner
❑2	29%	Director of Golf
❑3	51%	General Manager
❑4	25%	Golf Professional
❑5	8%	Club Manager
❑6	4%	Other (specify) Super, Golf Operations Mgr., Golf Shop Mgr.

Appendix C. Definition of Golf Terms

NGCOA NATIONAL GOLF COURSE OWNERS ASSOCIATION

GOLF INDUSTRY DEFINITIONS:

The following definitions are terms familiar to the business and game of golf. This list of industry definitions has been adopted by the GOLF 20/20 Executive Board and approved by all leading golf associations – GCSAA, LPGA, NGCOA, NGF, PGA of America, PGA TOUR, and the USGA as of March 2002.

The GOLF 20/20 Executive Board consists of Jim Awtrey, CEO of the PGA of America; David Fay, Executive Director of the United States Golf Association; Tim Finchem, Commissioner of the PGA TOUR; Mike Hughes, Executive Director of the National Golf Course Owners Association; Steve Mona, CEO of the Golf Course Superintendents Association of America; Wally Uihlein, CEO and Chairman of the Acushnet Company; and LPGA Commissioner Ty Votaw.

The list of definitions includes areas of participation such as golf courses and facilities (including alternative facilities and golf ranges), rounds of golf and levels of adult and junior participation; and consumers.

FACILITIES AND COURSES: TYPES:

REGULATION GOLF FACILITY: A Regulation Golf Facility is defined as a golf complex where there is at least one regulation golf course.

REGULATION GOLF COURSE: A Regulation Golf Course is defined as any nine-hole or 18-hole golf course that includes a variety of par three, par four and par five holes, and is of

traditional length and par; a nine-hole facility must be at least 2,600 yards in length and at least par 33, and an 18-hole facility at least 5,200 yards in length and at least par 66.

ALTERNATIVE FACILITY: An Alternative Golf Facility is defined as a golf complex that does not include a traditional golf course, but includes at least one alternative course.

ALTERNATIVE GOLF COURSE: Alternative Golf Courses include the following:

PAR-THREE COURSES: Par Three Courses are courses comprised exclusively of par three holes that average at least 100 yards in length.
EXECUTIVE COURSES: Executive Courses are short courses with a variety of par three, par four and/or par five holes. Eighteen-hole executive courses are 5,200 yards in length or less, with a par of 65 or less.

COURSES OF NONTRADITIONAL HOLE CONFIGURATION: Courses of Nontraditional Hole Configuration would include courses where the holes are of traditional length in something other than a nine or 18-hole configuration.

PITCH & PUTT COURSES: Pitch & Putt courses are short par-three courses where the holes average less than 100 yards in length.

FACILITIES AND COURSES: STRUCTURE:

PRIVATE GOLF COURSE: A Private Golf Courses is a facility where play is restricted to members and their guests.

RESORT GOLF COURSE: A Resort Courses is a golf facility usually affiliated with a lodging component.

PUBLIC ACCESS GOLF COURSE: A Public Access Golf Course is a facility that provides at least limited access and which may or may not offer memberships. Public access courses include:

DAILY FEE GOLF COURSE: A Daily Fee Course is a privately owned course that is open to the public without restriction.

SEMIPRIVATE GOLF COURSE: A Semiprivate course is a public course that also offers memberships

MUNICIPAL GOLF COURSE: A Municipal course is one that is owned by a tax-supported entity such as a city, county or state, which is open to the general public at all times.

MILITARY GOLF COURSE: A Military Golf Course is one affiliated with a military base where members of the military and their families receive preferred rates.

GOLF RANGES:

GOLF RANGE: A Golf Range is a facility where the public has the opportunity to hit golf balls. A range that is not open to the public, as at private and resort facilities, is not included in this definition.

STAND-ALONE RANGE: A Stand-alone range is a golf range that is not part of a complex including other golf components.

NONTRADITIONAL FACILITIES:
We use the term nontraditional facilities to describe any golf-related facility that involves participation, but is not covered in the above definitions.

Examples of nontraditional facilities include upscale putting courses, miniature and putt-putt golf courses, indoor simulators, etc.

ROUNDS:

REGULATION ROUND: A Regulation Round of golf is defined by one person who tees off in an authorized "start" on a regulation golf course. The round is not defined by the number of holes played or the fees paid.

ALTERNATIVE ROUND: An Alternative Round is defined by one person who tees off in an authorized "start" on an alternative golf course. The round is not defined by the number of holes played or the fees paid.

PARTICIPATION:

PARTICIPANT: A Participant is a person five years of age or above who played at least one regulation round of golf, or utilized an alternative facility or golf range at least once in the past 12 months. The total number of participants is determined by adding the number of golfers, alternative golfers, junior participants, and range users.

GOLFER: A Golfer is a person age 18 or above who has played at least one regulation round of golf in the past 12 months.

OCCASIONAL GOLFER: An Occasional Golfer is a golfer who plays less than eight regulation rounds in a year.

CORE GOLFER: A Core Golfer is one who plays eight to 24 regulation rounds in a year.

AVID GOLFER: An Avid Golfer is one who plays 25 regulation rounds or more in a year.

FORMER GOLFER: A Former Golfer is any person who was at one time a Golfer, but has not played a regulation round of golf in the past 24 months.

ALTERNATIVE GOLFER: A person age 18 or above who has played at least one alternative round in the past 12 months, but has not played a regulation round.

JUNIOR PARTICIPANT: A Junior Participant is any person from five to 17 years old who has played at least one regulation round in the past 12 months, or utilized a golf range or alternative facility in the past 12 months.

JUNIOR GOLFER: A Junior Golfer is any person from five to 17 years old who has played at least one regulation round in the past 12 months.

CORE JUNIOR GOLFER: A Core Junior Golfer is any Junior Golfer who plays at least 8 regulation rounds of golf in a given year.

AVID JUNIOR GOLFER: An Avid Junior Golfer is any Junior Golfer who plays at least 25 regulation rounds in a given year.

RANGE USER: A Range User is anyone age 18 and above who participates in golf in the course of a given year only by utilizing a golf range.

CONSUMERS:

CORE CONSUMER / BEST CUSTOMER: As stated at the 2001 GOLF 20/20 conference as part of the Segmentation Research, a Best Customer is defined as a golfer who plays at least 25 regulation rounds per year OR is the head of a household that spends at least $1,000 per year on golf fees and equipment.

Appendix D. Expert Interviewee Professional Profiles

The researcher clearly explained the purpose of the research and had them agree in writing to the terms and conditions of the interview. Most of the interviews were taped using a "Pulse Pen System," which enabled the researcher to take notes and to return directly to the recorded interview for exact quotations by clicking the point of the pen onto the written notation. The interviewees were asked for their permission to be quoted in the research report and/or any subsequent publications.

To follow are the professional profiles describing the experience and expertise for the seven real estate developers and the five golf course architects who were interviewed.

Real Estate Developers (7)

1. Howard "Champ" Covington is the Managing Director of Covington/ Tutman Properties, LLC, a real estate development company formed in 2006. He has been involved in both commercial and residential real estate for 40+ years. Covington has been prominent in community development, serving on many boards as well as his work as chairman of the South Carolina Infrastructure Bank Board, which given his experience as a developer provided him a different perspective regarding the impact of real estate development on the state infrastructure and the opportunities associated in having BMW locating a manufacturing plant in South Carolina. His passion for golf led

to the development of a number of golf communities such as Thornblade Country Club in Greer, SC., which hosts the PGA Tour's "Nationwide BMW Charity Pro Am."

- Face-to-Face Interview location: Thornblade Country Club, Greer, SC.
- Date and Time: April 4, 2012; 12:00 to 2:00 PM.
- IRB Consent Form was signed; the interview was not recorded per the interviewee's request.

2. Henry B. Delozier is a Principal in Global Golf Advisors, an international consultancy service to the investment banking, real estate development and golf asset ownership and operations business segments. Delozier is recognized within the golf industry for his uncommon understanding of golf and residential properties. He joined Global Golf Advisors after nine years as the Vice President, Golf of Pulte Homes, where he developed 27 new golf courses within 10 states.

During his tenure at Pulte Homes the company became the largest developer of golf communities in the USA having invested more than $500 million in the development of golf assets. In addition, Delozier was responsible for the operation of more than 20 Pulte golf courses, which produced annual revenues in excess of $90 million.

- Telephone Interviews Dates and Times: August 22, 2011; 3:00 to 4:00 PM, with follow up interview on August 23, 2011; 1:00 to 1:50 PM.
- IRB Consent Form was signed; the interview was audio tape recorded.

3. Paul Fletcher is the President of Fletcher Management Company. Fletcher and his brother, Jerome, have been in real estate development business for 40 years. In the

midst of the real estate downturn, they have acquired over $200 million in land parcels including: a 2,300 in waterfront property for a golf/marina project 11 miles south of Savannah (Tom Fazio golf course); a 21,000 acre mixed use project west of St. Augustine; and, a 1,600 acre parcel south of Jacksonville as well as Palencia Club, St. Augustine, Florida (1,400 acre gated residential and marina).

Of particular note is that the Fletchers donated 415 of the 5,300 acre parcel to the PGA Tour for $1.00 for the development of the Sawgrass Tournament Players Club, Ponte Vedra Beach, FL (Pete Dye golf course), which paved the way for the subsequent development of Marsh Landing Country Club, Ponte Vedra Beach/Jacksonville Beach, FL (1,700 acre gated residential and marina/ Arnold Palmer golf course).

- Face-to-Face Interview location: Ponte Vedra Lodge & Club, Ponte Vedra Beach, FL.
- Date and Time: April 10, 2012; 8:00 to 10:30 AM.
- IRB Consent Form was signed; the interview was audio tape recorded.

4. MG Orender is President of Hampton Golf Clubs which currently operates 10 golf facilities in the Southeast. He has been a member of the PGA since 1981, and in 2003, was named its 33rd president. In 1989, Orender formed Golftrust and proceeded to build and manage several Florida golf clubs including: Timacuan Country Club in Orlando, Cypress Creek Golf Club in Tampa, Schalamar Creek in Lakeland, DeBary Plantation in Debary, Cypress Head in Daytona Beach and the Country Club of Mount Dora in Mt. Dora. In 1996, he merged Golftrust into Granite Golf, which now manages,

leases and owns nearly 30 facilities in 11 states, four of which are currently under various stages of construction. In 1998, Orender left Granite Golf to establish Hampton Golf.

- Face-to-Face Interview location (s): Players Cafe, Ponte Vedra Beach, FL.
- Dates and Times: September 13, 2011, 8:00 to 10:30 AM; and, November 21, 2011, 8:00 to 10:00 AM.
- IRB Consent Form was signed; the interview was audio tape recorded.

5. John Reed is CEO of Reed Development. He has been involved in the development of premier properties in the greater Hilton Head area for over 30 years. His efforts have encompassed over $400 million in development and $800 million in real estate sales. Reed began his successful real estate career in sales and marketing with the Sea Pines Company in 1973. As a founding partner of Lighthouse Realty in 1976, he helped develop it into one of South Carolina's largest real estate sales and marketing organizations. After selling the company in 1981, Reed founded and served as general partner of The Delta Group. In 1989, he assembled the land and began the development of Colleton River Plantation, the first of his five communities in Bluffton, South Carolina, just off of Hilton Head Island. This bold, successful move helped make Bluffton the fastest growing town in South Carolina

- Face-to-Face Interview location (s): Clemson University Madren Center, Clemson, South Carolina; and, Reed Development, Bluffton, SC.
- Dates and Times: April 2, 2012, 4:15 to 6:15 PM; April 9, 2012, 1:00 to 3:00 PM.
- IRB Consent Form was signed; the interview was audio tape recorded.

6. A.J. "Buddy" Thompson, Jr. MD is a renowned medical doctor who founded Easley Eye Associates in 1981. In 1999, he and of group of investors (23 of them doctors), co-founded the Keowee Toxaway, Co., LLC. Thompson is the president of the investor and management group that is responsible for the development of "The Reserve at Lake Keowee," a 3,900 acre lakefront and golf community.

- Face-to-Face Interview location: Dr. Thompson's home at The Reserve at Lake Keowee, Sunset, SC.
- Date and Time: April 4, 2012, 4:30 to 7:00 PM.
- IRB Consent Form was signed; the interview was audio tape recorded.

7. Bob Whitley is the president of Whitley Development Group of North Palm Beach, FL. Over the past 30-years, Whitley has been involved with some of the most successful real estate developments in the country. Partnered with Rockwood Capital, Whitley is currently developing Currahee Club, a 1,150-acre master planned, lakefront community located on Lake Hartwell, near Toccoa, GA.

The Whitley Development Group, in partnership with Jack Nicklaus, is a principal in the development of two Nicklaus signature clubs in the North Palm Beach area, The Bear's Club and The Ritz-Carlton Golf Club & Spa of Jupiter. He was also instrumental in developing Golden Bear Plaza, the 250,000-square-foot office complex that houses Jack Nicklaus' Golden Bear International headquarters. From 1984 through 1990, as managing partner of Old Marsh Partners, Whitley developed the Pete Dye-designed, Old Marsh Golf Club, a 452-acre, 217-unit, single-family development in

northern Palm Beach County, FL. Following Old Marsh, he developed the award-winning Colleton River Plantation, a 697-acre, 395-lot residential community near Hilton Head Island, SC. Colleton River's Jack Nicklaus signature course was voted "Best New Private Course in America" in 1993 by Golf Digest.

- Telephone Interview Date and Time: August 31, 2011, 10:00 to 11:45 AM.
- Face-to-Face interview location: Toojays Restaurant, Palm Beach Gardens, Florida.
- Date and Time: January 4, 2012, 8:00 to 9:30 AM.
- IRB Consent Form was signed, and the interviews were audio tape recorded.

Golf Course Architects (5)

1. Tom Fazio has designed more than 120 courses and has more courses ranked among the top 100 in the U.S. than anyone else in the business. Throughout his 35 years in golf course design, Fazio and his staff of talented designers have been recognized for creating award-winning courses throughout the United States. No living designer has more credits on Golf Digest's list of America's 100 Greatest Golf Courses and Golfweek's collection of America's Best. The Golf Digest poll for Best Modern Day Golf Course Architect was discontinued after Tom claimed the award three consecutive times; and, he has also received The Old Tom Morris Award from the Golf Course Superintendents Association of America.

- Telephone Interview Dates and Times: January 4, 2012, 10:00 to 11:00 AM; July 11, 2012, 10:30 to 11:30 AM.
- IRB Consent Form was not signed (verbal approval), and the interview was not audio tape recorded.

2. Jim McCumber is the chairman and CEO of McCumber Golf, and with his brother, PGA Tour professional Mark McCumber, has co-designed more than 40 golf courses. McCumber Golf has achieved international recognition for its classical architectural style. Also, the McCumbers have owned, managed and operated golf facilities, which provides a different perspective from most real estate developers and golf course architects.

- Face-to-Face Interview locations: Montana Grill restaurant, Jacksonville, Florida
- Date and Time: September 13, 2011; 12:30 to 2:00 PM.
- IRB Consent Form was signed; the interview was audio tape recorded.

3. Greg Norman was one of the most prolific international players in the game's history. In addition to being the number one ranked player for 331 consecutive weeks, experience in playing many of the world's great golf courses over the span of his 25-year career served as a catalyst to develop his interest in golf course design. First established in 1987, Greg Norman Golf Course Design has completed more than 70 golf courses on six continents. Norman's golf courses have garnered numerous prestigious awards for design, with many of the projects being awarded the coveted Audubon Society Award for

environmental stewardship. Norman designed golf courses have hosted sanctioned events on the PGA, Nationwide, European, and Australasian Tours. Given the breadth of Norman's business interests, he offers special blend of land planning, design and construction to help deliver the best possible result.

- Telephone Interview Date and Time: August 26, 2011, 10:00 to 11:00 AM.
- IRB Consent Form was signed; the interview was audio tape recorded.

4. Bob Walker has more than 35-years of experience in the golf course design business and has been involved in more than 130 projects worldwide. His company, Robert C. Walker, Inc. (RCWI) specializes in the planning, design and construction inspection of Public, Private, Daily-Fee and Resort Golf Courses. RCWI also provides golf course community land planning and remodeling services for existing facilities.

In 1974, Walker joined the Palmer Course Design Company (PCDC) and was involved in the design of more than 75 golf course projects spanning 23 states and seven foreign countries including Fossil Creek Golf Club in Ft. Worth, TX and the Chung Shan Golf Club near Canton, the first golf course built in the People's Republic of China. In 1986, he formed Robert C. Walker, Inc. Two of RCWI's most notable golf courses include Stonebridge Golf & Country Club in Albany, GA (Golf Digest 1997 Top Ten List of America's Best New Golf Courses) and Regatta Bay in Destin, FL (Best New Course by Florida Golf).

- Face-to-Face Interview location (s): The Diner, Jacksonville Beach, FL.

- Dates and Times: September 14, 2011, 8:00 to 11:15 AM; and, December 19, 2011, 8:00 to 11:00 AM.
- IRB Consent Form was signed; the interview was not recorded per interviewee's request.

5. Bobby Weed is President and CEO of Bobby Weed Golf Design. Weed's professional career began with an apprenticeship under Pete Dye, an association that stretched for over 17 years. In 1983, he was hired by the PGA Tour, where he advanced to become their in-house architect in 1987. From that post, he was responsible for the design of many of today's best known TPC venues, which continue as host sites for prominent Tour events.

Weed was also able to collaborate with many of the PGA Tour's most famous golfers, including Sam Snead, Gene Sarazen, Arnold Palmer, Jack Nicklaus, Raymond Floyd and Chi Chi Rodrigues. In 1994, Weed's career and experience reached an apex with the formation of his own design firm where he continues to "hand-craft" golf courses. Today, Bobby Weed Golf Design has amassed an impressive list of accomplished courses that are consistently ranked at the top of their respective categories.

- Face-to-Face Interview locations: Players Café (two interviews), Ponte Vedra Beach, FL; and, Bobby Weed's Design Office. Ponte Vedra Beach, FL.
- Dates and Times: December 20, 2011, 8:00 to 10:00 AM; March 30, 2012, 8:00 to 9:30 AM; and, April 11, 2012, 4:00 to 6:00 PM.
- IRB Consent Form was signed; the interviews were audio tape recorded.

Appendix E. Institutional Review Board (IRB) Compliance Documentation

1) IRB Determination Letter;

Dear Dr. Worzala,

The chair of the Clemson University Institutional Review Board (IRB) validated the protocol identified above using exempt review procedures and a determination was made on **August 19, 2011**, that the proposed activities involving human participants qualify as **Exempt** from continuing review under Category **B2**, based on the Federal Regulations (45 CFR 46). You may begin this study.

Please use the approved consent form attached; the IRB contact information was updated.

Please remember that the IRB will have to review all changes to this research protocol before initiation. You are obligated to report any unanticipated problems involving risks to subjects, complications, and/or any adverse events to the Office of Research Compliance (ORC) immediately. All team members are required to review the "Responsibilities of Principal Investigators" and the "Responsibilities of Research Team Members" available at http://www.clemson.edu/research/compliance/irb/regulations.html.

We also ask that you notify the ORC when your study is complete or if terminated. Please let us know if you have any questions and use the IRB number and title in all communications regarding this study.

Good luck with your study.
All the best,
Nalinee

Nalinee D. Patin

IRB Coordinator
Clemson University
Office of Research Compliance
Institutional Review Board (IRB)
Voice: (864) 656-0636
Fax: (864) 656-4475
E-mail: npatin@clemson.edu
Web site: http://www.clemson.edu/research/compliance/irb/
IRB E-mail: irb@clemson.edu

2) Approval Consent Form:

Institutional Review Board (IRB) Interview Consent Form
As an expert in golf course development and management, you know that since 2000, the golf industry has experienced significant declines in the key barometers of its economic wellbeing as defined by: the number of golfers; the number of golf rounds; and, the net increase (decrease) in the number of golf courses. As a result, the golf industry is in the midst of a major crisis in the economic sustainability of its built environment.

The purpose of this research is to define the paradigm change in the nature and type of golf courses built (or renovated) during the 1990s development boom, and to determine whether or not these golf courses were longer, more difficult and more expensive to play compared to the golf courses built during the previous golf course development boom periods in the 20th century. We want to learn how and why this change occurred; and, assesses its effect on the game and the golf course business.

What we will ask you to do: If you are agreeable, we would ask for your formal consent to be interviewed by signing below. The interview will take about 30 to 60 minutes to complete. With your permission, we would also like to tape-record the interview to ensure the accuracy of any quotations made. The researcher will take notes during the interview, and can directly access your comments by tapping those notes that will replay the audio.

Risks and benefits: No risks are anticipated for participation in this study other than those encountered in day-to-day life. No benefits or compensation will be paid.

Records: The records of this study will be kept private. If you wish, we will not include any information that will make it possible to identify you in any sort of report we make public. Research records will be kept in a locked file; only the researchers will have access to the records. If the interview is tape-recorded, we will destroy the tape after it has been transcribed, which we anticipate will be within two months of its taping.

Taking part is voluntary: Taking part in this study is completely voluntary. You may skip any questions that you do not want to answer. If you decide to take part, you are free to withdraw at any time.

If you have questions: The researchers conducting this study are David Hueber and Dr. Elaine

Worzala. Please ask any questions you have now. If you have questions later, you may contact David Hueber at dbhueber@gmail.com or at 1-904-392-6155. You can reach Dr. Worzala at eworzal@clemson.edu or 1-858-353-2067.

If you have any questions or concerns about your rights in this research study, please contact the Clemson University Office of Research Compliance (ORC) at 864-656-6460 or irb@clemson.edu. If you are outside of the Upstate South Carolina area, Please use the ORC's toll-free number, 866-297-3071.

You will be given a copy of this form to keep for your records.
Statement of Consent: I have read the above information, and have received answers to any questions I asked. I consent to take part in the study.

Your Signature _____ Date _____

Your Name (printed_____

In addition to agreeing to participate, I also consent to having the interview tape-recorded.

Your Signature _____ Date _____

Signature of person obtaining consent _____ Date _____

Printed name of person obtaining consent _____ Date _____

This consent form will be kept by the researcher for at least three years beyond the end of

the study and was approved by the IRB on _____.

Appendix F. Press Release:
Clemson University "GOLF S.O.S: Symposium on Sustainability"

CLEMSON UNIVERSITY HOSTS INAGURAL "GOLF S.O.S: SYMPOSIUM ON SUSTAINABILITY" & BOBBY WEED IS HONORED AS FIRST RECEPIENT OF THE DAVID HUEBER AWARD FOR LEADERSHIP AND INNOVATION IN SUSTAINABLE GOLF COMMUNITY DEVELOPMENT

Clemson, South Carolina, April 2, 2012 – Clemson University's Richard H. Pennell Center for Real Estate Development and the Arthur M. Spiro Institute for Entrepreneurial Leadership sponsored the first symposium on sustainable golf course development to address the issues confronting the future growth and vitality of the game, the golf industry and related master planned communities with golf as the central amenity.

Dr. Joe Beditz, president and CEO of the National Golf Foundation, and Bobby Weed, president and CEO of Weed Design, kicked off the event as the keynote speakers; and, John Reed, CEO of Reed Development and Dr. "Buddy" Thompson, a physician and developer of the Reserve at Lake Keowee rounded out the expert panel discussion on the challenges and opportunities in golf course community development.

Dr. David Wyman, the Associate Director of the Spiro Institute, served as the conference moderator, and noted the Dr. Beditz presentation and situational analysis regarding the "Current State of the Game" was both revealing and insightful, and remarked that "When Dr. Beditz first presented the facts and figures, he portrayed an industry in peril with a contraction in golf participation, rounds played and golf courses going out of business. However, he put the current downturn in the context of the peak in the many measures defining the state of golf as a natural adjustment over a longer period, and noted that as the U.S. economy and real estate

market gradually improve, the golf industry will also improve as the industry culls out those golf courses that are not sustainable in the emerging new business environment."

Dr. Elaine Worzala, Director of the Pennell Center for Real Estate Development, was particularly intrigued with Bobby Weed's entrepreneurial approach in his presentation, "Repurposing for Sustainable Golf Course Development," which focused on the innovative redevelopment of golf communities that were running out of options. "What I found most interesting was Bobby Weed's ability to take a project and orchestrate relatively simple changes that allow the owners to redevelop and remarket a community, and overcome what seems like major obstacles by engaging the community and turning them into partners in the redevelopment process. The example Mr. Weed detailed was a win, win, win proposition for everyone involved. The golfers got a better golf experience. The community preserved a recreational greenbelt asset, and the developer enjoyed a revitalized asset that was worth more than double the original value with less debt."

The panel discussion that followed included John Reed, a successful developer with an excellent track record in golf community development including Colleton River Plantation, the first of five major communities in Bluffton, South Carolina, as well as Dr. Buddy Thompson, a very unassuming and successful developer and cofounder of the Reserve at Lake Keowee, SC during the recent real estate downturn. John Reed offered a very unconventional approach and view of the challenges and opportunities ahead in stating that "What we need to do today and tomorrow is simply give people what they want, not what we think they should want." He went on to say that the issues that must be addressed relate to: "Time" because we need to offer a golf experience that might only take an hour; the "Women's Movement," because 92% of the real estate purchase decisions are made by women so we need to appeal to their social and family interests; "Generational Shift," because the Eisenhower generation is giving way to the Baby Boomer generation, which has a different set of values and needs; and, the new "Market Reality," where home purchase decisions are based more on lifestyle needs and not driven by real estate speculation.

Dr. Thompson echoed many of those same sentiments and emphasized the multi-generational property buyers at the Reserve, which features lake front living, premier golf and a host of country club amenities for the entire family to enjoy. In fact, the Reserve now offers a "vertical" multigenerational membership plan, whereby everyone in the family including the grandparents, parents and kids are full members under one membership.

The symposium concluded with Dr. Worzala presenting Bobby Weed with the first *David Hueber Sustainable Golf Community Sustainability Award.* Throughout his professional career and later in his doctoral research, David Hueber has opened the eyes of the industry, and this new "Game Changer" award will annually recognize leadership and innovation in the principles and practice of sustainable golf course development and operations as the golf business must now chart a new course toward becoming a sustainable industry with golf courses and golf communities that are environmentally sensitive, economically viable and socially responsible.

About Clemson University:

Clemson University is ranked as the 25th best national public university by *U.S.News and World Report*, Clemson is a vibrant student-centered community that thrives on leadership, research, collaboration and a winning spirit — in academics, athletics and life.

Contact:

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Appendix G. Audubon Cooperative Sanctuary Program (ACSP) for Golf Courses

The Audubon International (AI) introduced its Audubon Cooperative Sanctuary Program (ACSP) for Golf Courses in 1991, and has developed the "Standard Environmental Management Practices" that is the basis for the ACSP's certification guidelines. The ACSP program has been oriented toward new golf course development as evidenced by the high percentage of its 2,000 member golf courses and the nature of their ratings standards and criteria, which focuses on six areas of environmental concern:

- Environmental Planning
- Wildlife and Habitat Management
- Chemical Use Reduction and Safety
- Water Conservation
- Water Quality Management
- Outreach and Education

Becoming a Certified Audubon Cooperative Sanctuary golf course represents a commitment to long-term environmental stewardship and adoption of AI best management practices, which is essential in attaining and maintaining the ACSP environmental management standards. Figure A.1, is an excerpt from the Audubon International "Golf Certification Handbook" regarding the best environmental practices for "Wildlife and Habitat Management."[28]

[28]

Wildlife and Habitat Management

Purpose: *To enhance natural areas and landscaping on the golf course to protect and sustain native habitats and the wildlife that depend on them for survival.*

Environmental Management Practices	Yes	Partial	No	Planned Efforts Indicate *start date* and *completion date* or "*ongoing*" for projects that are only partially implemented or not yet begun. Explain practices that are not applicable here.
Goal 1: General Knowledge *To continually expand our general knowledge of the plants, wildlife species, and habitats found on our golf course.*				
1. We have identified core habitats, such as mature woodlands, wetlands, or stream corridors, and special habitat concerns, such as endangered or threatened species, on the property.				
2. We train staff to understand that management practices may positively enhance or adversely impact wildlife species and habitats on the property.				
3. We have identified the dominant indigenous (native) plant community and ecological region in which the golf course is located.				
4. We maintain an on-going written inventory of at least bird and mammal species to document and track wildlife use of the property. Additional inventories may include amphibians, reptiles, fish, and other wildlife, and plants, such as trees, shrubs, and herbaceous species (non-woody plants).				
Goal 2: Wildlife Habitat: Space, Food, Cover, and Water Enhancements *To improve minimally used and landscaped areas to provide habitat for a variety of wildlife species.*				
5. We maintain natural wildlife habitat in at least 50% of all minimally used portions of the property.				
6. We have connected wildlife habitat areas -- such as woods, meadows, stream corridors, and ponds -- to others inside and outside our property boundaries, with corridors of natural vegetation.				
7. We maintain or plant varying *heights* and *types* of plants, from ground cover to shrub and tree layers in habitat areas such as woods, desert, or prairie (*e.g.,* in woodlands-leave understory, in tall grass areas-maintain grasses and herbaceous plants).				
8. We leave dead trees standing when they do not pose a safety hazard.				
9. We maintain a water source for wildlife *with aquatic plants* and *shrubbery or native landscaping along the shoreline* (*i.e.,* not turfgrass). This could be a pond, stream, wetland, or river corridor. On smaller properties, this may also include a birdbath or created "backyard" pool.				
10. We have naturalized at least 50% of our *out-of-play* shorelines with emergent-aquatic and shoreline plants. Special attention is given to shallow water areas (<2ft. deep) since wildlife is most abundant when shallow water includes emergent aquatic vegetation.				
11. We choose flowers for gardens or container plants that will provide nectar for hummingbirds or butterflies.				

Figure A.1: Audubon International Wildlife and Habitat Management.
Source: © 2004 Audubon International. All rights reserved.

Appendix H. Copyright Held by Others "Letters of Consent"

Since this dissertation's use of copyrighted work is for nonprofit, research educational purposes, it is generally consider to be "Fair Use" under Section 107 of the copyright law, and should not have any effect upon the value or market for those copyrighted photographs, charts, graphs and/or tables.

For those documents where there may have been some alteration of copyrighted materials or some uncertainty as to the copyright owners' concern regarding this usage, "Letters of Consent" were secured and are enclosed as follows:

July 7, 2012

Mr. David Hueber
Clemson University
Center for Real Estate Development
College of Architecture, Arts & Humanities
College of Business & Behavioral Sciences
125 Lee Hall, Box 340511
Clemson, SC 29634

Dear Mr. Hueber:

Per your request, I am providing permission for you to use any photographs, illustrations, diagrams and/or any copyrighted materials in your dissertation.

Please provide all photography credits to Joel Riner, Quicksilver Photography, Coeur d'Alene, Idaho.

Sincerely,

Andy Mackimmie
Head Golf Professional, PGA
The Coeur d'Alene Resort Golf Course
900 Floating Green Dr.
Coeur d'Alene, ID 83814

July 2, 2012

Mr. David Hueber
Clemson University
Center for Real Estate Development
College of Architecture, Arts &
Humanities College of Business &
Behavioral Sciences
125 Lee Hall, Box 340511
Clemson, SC 29634

Dear Mr. Hueber:

Per your request, I am providing permission for you to use any photographs, illustrations, diagrams and/or any copyrighted materials in your dissertation.

Sincerely,

Bobby Weed

NGF
NATIONAL GOLF FOUNDATION

JOSEPH F. BEDITZ, Ph.D.
President & Chief Executive Officer

July 2, 2012

Mr. David Hueber
Clemson University
Center for Real Estate Development
College of Architecture, Arts & Humanities
College of Business & Behavioral Sciences
125 Lee Hall, Box 340511
Clemson, SC 29634

Dear Mr. Hueber:

You are hereby authorized to incorporate into your dissertation all of the proprietary data, analyses, charts, illustrations, graphs and other materials that are otherwise under copyright protection by the National Golf Foundation.

Sincerely,

Joe Beditz

Joseph F. Beditz, Ph.D.
President and Chief Executive Officer

NATIONAL GOLF FOUNDATION
1150 SOUTH U.S. HIGHWAY ONE, SUITE 401, JUPITER, FL 33477
PHONE: 561-744-6006 • FAX: 561-744-6107 • www.NGF.org

The PARC Group, Inc.

July 2, 2012

Mr. David Hueber
Clemson University
Center for Real Estate Development
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College of Business & Behavioral Sciences
125 Lee Hall, Box 340511
Clemson, SC 29634

Dear Mr. Hueber:

The PARC Group herby consents to your use of the attached photograph (and the reference below the photograph) for use in your personal dissertation at Clemson University. Such consent is conditioned upon your receipt of consent from Portland and Chris Swan, who can be reached at pswanfl@gmail.com.

Please provide us with a copy of such consent when received.

Sincerely,

Richard T. Ray
The PARC Group
Managing Partner

REED
DEVELOPMENT

July 2, 2012

Mr. David Hueber
Clemson University
Center for Real Estate Development
College of Architecture, Arts & Humanities
College of Business & Behavioral Sciences
125 Lee Hall, Box 340511
Clemson, SC 29634

Dear Mr. Hueber:

Per your request, I am providing permission for you to use any photographs, illustrations and/or other copyrighted materials in your dissertation.

Sincerely,

John P. Reed

P.O. Box 23767 | Hilton Head, SC 29925 | Tel: (843) 836-7900 | Fax: (843) 836-7901

July 2, 2012

Mr. David Hueber
Clemson University
Center for Real Estate Development
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College of Business & Behavioral Sciences
125 Lee Hall, Box 340511
Clemson, SC 29634

Dear Mr. Hueber:

Per your request, I am providing permission for you to use Audubon International's photographs, illustrations, diagrams and/or copyrighted materials in your dissertation.

Sincerely,

Jim Sluiter
Jim Sluiter
Staff Ecologist/Program Manager

Audubon International | 46 Rarick Road, Selkirk, NY 12158 | 518-767-9051 ext. 116

http://www.audubonintemational.org