Distance Gains and Growing Pains: Addressing Distance Proliferation on the PGA TOUR

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Golf's Breaking Point

According to Golf Digest journalist Jaime Diaz, PGA TOUR golf has been "stretched to a near breaking point" (2017) by the unprecedented increase in driving distance. As PGA TOUR golfers have gained the ability to hit the golf ball historic distances, the golf community is starting to wonder if the professional game is changing in irreversible and undesirable ways. Golf course architects watch as the integrity of their classical designs crumbles, everyday fans view the PGA TOUR product as increasingly unrelatable, rank-and-file Tour players fear their livelihood is becoming inaccessible, and equipment manufacturers are wrestling with partially unwarranted blame. While these distance trends over the past two decades are almost universally acknowledged, many still debate if and how the governing bodies of golf such as the United States Golf Association (USGA) and the PGA TOUR should address this phenomenon. A sport long marked by decorum is now burdened with the stridency of competing stakeholders and perspectives within the vast actor-network of the PGA TOUR. Using Bruno Latour's Actor Network Theory (ANT) (Latour, 1996), this thesis dissects the complex array of characters and relationships surrounding distance gains and analyzes the potential of proposed solutions.

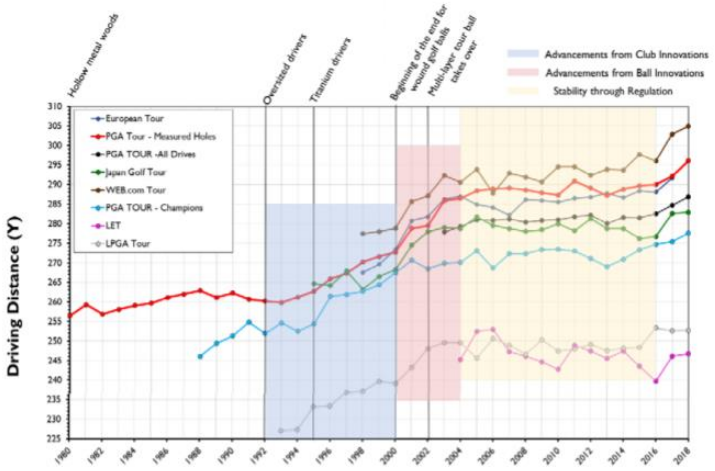
Distance Gains: A Wicked Problem

How should the governing bodies of golf such as the USGA and the PGA Tour address distance gains on the PGA Tour?

The issue of distance gains on the PGA TOUR is complicated and difficult to define. The optimal outcome is not clear, and there is little historical context to base a possible decision on. Additionally, there are long-term ethical ramifications to any proposed solution. The livelihoods of players and their families hinge upon the regulations of the PGA TOUR and the USGA, and other entities such as fans, media and equipment companies have emotional stake in the issue as

well. For these reasons, a traditional analysis using empirical methods is not suitable. This thesis uses the methodology of wicked problem framing to analyze distance gains on the PGA TOUR. Wicked problem framing originated from a 1973 paper on urban planning authored by two UC Berkley professors (Rittel and Webber, 1973). The key characteristics of a wicked problem, such as ambiguous goals, ethical consequences, and unclear solutions, mirror the challenges posed by the issue of distance gains. Generally, wicked problems offer little opportunity for trial and error problem-solving as minor tweaks to sociotechnical systems have lasting societal traces. Wicked problem framing aptly ties together the reports, interviews, and commentary that encapsulate the variety of viewpoints and stakeholders surrounding distance gains in golf. These primary sources include, but are not limited to, player interviews, official PGA TOUR remarks, USGA reports, golf media discourse, architectural commentary and equipment company statements. Additionally, analysis using PGA TOUR data validates the observational claims made by critics of distance gains. The perspectives gained from these sources and organized using wicked problem framing provide a viable pathway to answering this research question. In the Feasibility and Appeal of Proposed Solutions section, research is organized by separating commentary on each of the proposed solutions.

Ambiguous Causes and Widespread Consequences



"*Figure 1.* Average driving distance on the major tours with significant innovation milestones overlaid" (*A Review of Driving Distance—2018*, 2018)

Although distance has been steadily increasing on the PGA TOUR for over two decades, as shown in Figure 1, this phenomenon has only caught the public eye recently. The United States Golf Association (USGA), the primary governing body of American golf, only started publishing its annual distance report in 2015 (*A Review of Driving Distance—2018*, 2018). Some of this lack of awareness is due to ambiguity and multiplicity surrounding the causes of distance gains. Equipment improvements, also illustrated by Figure 1, constitute two of the primary causes. The multi-layered golf ball, pioneered by Titleist in 2000, caused a six-yard leap in average driving distance the following year and has been improved upon since (McClusky, 2014). Additionally, improvements in driver materials and customizable features have helped players optimize both distance and accuracy off the tee (Rapaport, 2019b). Separate from equipment advancements, younger generations of golfers have placed greater emphasis on fitness, drawing inspiration from Tiger Woods' explosive play at the turn of the century (Kalland, 2016). Finally, swing instructors have used a better understanding of biomechanics to

help players create more speed and stability in their golf swings (Ritter, 2018). Distance gains on the PGA TOUR are a complex phenomenon that cannot be attributed to a singular cause.

Setting cause aside, this development has unquestionably changed the complexion of the PGA TOUR. Players recognize that prodigious distance is now a prerequisite skill for contending in most major tournaments. Before the 2019 PGA Championship, which featured 156 of the world's top golfers, Olympic champion Justin Rose said he felt only "30-40 guys … can win this tournament based on length. I think driving the golf ball and distance will be a really big advantage this week" (Coffin, 2019). This troubles many fans, players, and commentators who worry skills like creativity and strategy are becoming irrelevant as distance becomes paramount. Former top-ranked players like Tiger Woods and Adam Scott share these concerns, describing length as an increasingly meaningless design element of PGA TOUR courses because of TOUR players' illimitable distance (Hoggard, 2017) (Marksbury, 2019). Golf course architects echo this dismay, fearing that their classically celebrated designs will be "overrun by the modern game" (Diaz, 2017). Golf's three main governing bodies have added their voices to the fray as well. USGA CEO Mike Davis believes unchecked distance gains have had a "horrible" (Alberstadt, 2017) impact on the game, while Royal & Ancient (a European body analogous to the USGA) chief Martin Slumbers admits distance gains have "crossed a line in the sand" (Gray, 2018b). The PGA TOUR, the third organization, has already implemented a driver-testing policy designed to identify drivers that have slipped past permitted technological limits (Menta, 2019). Many independent voices in the game, such as 18-time major champion Jack Nicklaus, have suggested imposing scientific requirements on golf balls to limit distance (Mell, 2018). Other important stakeholders, such as current top-ranked player Brooks Koepka and equipment manufacturer Taylormade, are either skeptical of or in opposition to the proposed rollback of the

golf ball (Rapaport, 2019a) (Dethier, 2018). Some believe more creativity, or at least more length, in course architecture could be a viable solution. However, building longer courses raises sustainability and real estate concerns, and pushing the limits of creativity can bring "criticism" and "discomfort" onto the architect (Diaz, 2017). While no consensus has been reached, important stakeholders in the game are universally alarmed at the rapid increase in distance on the PGA TOUR.

Golf's Actor-Network

With such a wide array of stakeholders and opinions, the use of Actor Network Theory (ANT) as an STS Framework for analyzing distance gains in golf is fitting. ANT is the process of tracing and understanding a complicated sociotechnical system through the interactions of its members. There are several key elements comprising ANT. First, components of an actor-network are both actors and networks (Callon, 1987). Entities act to bind other parts of the actor network together and are also constantly being formed by other entities as a part of the greater collective. Second, analysis using ANT does not distinguish between human and non-human constituents of the actor-network. ANT seeks to "extend the word 'actor'" (Latour, 1996) to non-human entities like technologies, texts, or social institutions. Finally, everything in a sociotechnical system is a direct effect of the heterogenous actor-network – nothing within the actor-network is immune to the developments of the overall actor-network (Cressman, 2009). The intertwined human and non-human elements of the distance debate can only be considered as they relate to and influence one another, making ANT an appropriate framework.

ANT is not without its critiques. First, Darryl Cressman argues that ANT is only valuable if it is applied to particular cases, and thus can be confusing if encountered "in the abstract" (Cressman, 2009). Because of this observational nature of ANT, important elements of a system

such as social norms, ethics, and societal values can be easily overlooked. Additionally, analyses using ANT can have the tendency to only evaluate from the perspective of a network's "winners" or "successful actors," excluding the "losers" obscured by the more successful forces within the network (Radder, 1992). Others think the difficulty in defining the scope of an actor-network outweighs the analytical benefit ANT affords. Answering the question, "Which actors do we follow? ..." (Cressman, 2009) can often be a troubling task. Extending the system to be too inclusive can cause the cohesiveness of the actor-network to be "not necessarily strong" (Radder, 1992), while limiting the actor-network to only its most influential entities results in the "successful actors" problem enumerated above. Furthermore, some view the claim that entities are simultaneously actors and networks as a crucial "ambiguity" (Radder, 1992). Some actors are bound to have more agency than others, so applying this balanced duality to all entities can be overly reductionist.

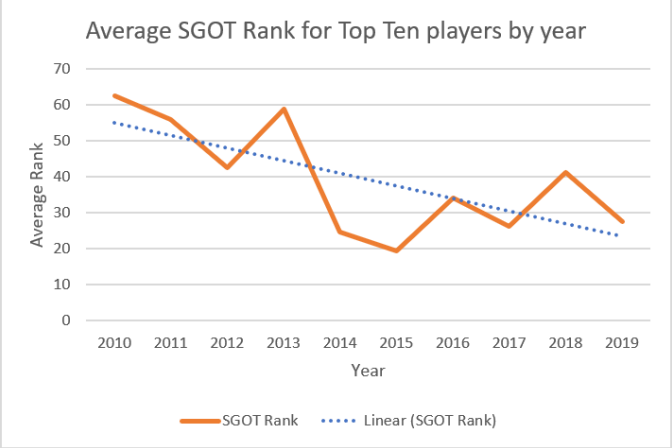
Despite the concerns listed above, ANT still serves as an effective framework for analysis. The overreach of distance gains on the PGA TOUR is a concrete issue, so problems associated with abstraction are not altogether relevant. Some entities within the actor-network, such as the PGA TOUR or the USGA, certainly have more agency within the system than others. Within this thesis, their role as simultaneous actors and networks will not be reduced to an impartial duality. Lastly, the majority of the major actors, regardless of their status as winners or losers, surrounding this issue are acknowledged. Perspectives of losing groups such as shorter hitters and heavily critiqued course architects are integral to this analysis. While ANT has many valid critiques, the nature of the distance gains issue and the core strengths of ANT make the framework an effective and appropriate vehicle for analysis.

Feasibility and Appeal of Proposed Solutions

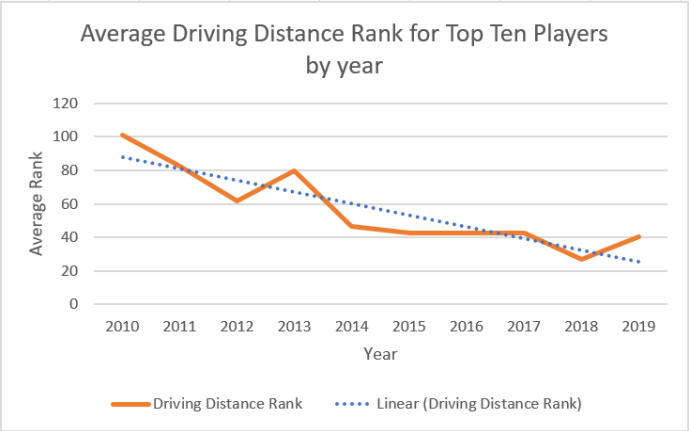
Through the following research it is clear that distance gains on the PGA TOUR are complex, and will require time and wisdom to solve completely. Decision makers need to be empirically convinced of the negative outcomes of distance proliferation. Data shows how the PGA TOUR skillset has become more one-dimensional, one of several consequences the golf world feared would result from distance gains. To protect the health of the game and the PGA TOUR from such outcomes, golf's governing bodies must weigh the efficacy of several proposed solutions. First, many stakeholders believe altering course architecture to either be longer or more creative could provide a better test for the game's best players. While adding length to courses is usually more ineffective and costly than it is beneficial, there are several well-documented examples of championship courses embracing innovative design concepts that are both sustainable and adequately challenging. In addition to designing more challenging golf courses, several stakeholders have proposed imposing technological limits on the golf ball to limit the distance it flies. Opinions of this proposal are varied and impassioned, but consensus regarding bifurcation of the golf ball is starting to build. However, before any action is taken on the golf ball, the competing interests of stakeholders must be acknowledged and assuaged. Changes to each of these technologies –course architecture and golf balls – would alter the actor-network of the PGA TOUR. The vast array of human perspectives on these non-human actors will all shape the likelihood of proposed actions. To address the issue of distance gains on the PGA TOUR, golf's governing bodies should encourage more innovative architecture and unite golf's stakeholders behind some measure of golf ball rollback.

As stated previously, many fans, players, and media personalities are concerned the requisite skillset to be an elite PGA Tour golfer is becoming less balanced. Specifically, many

fear skills relying on touch and creativity – such as putting or around the green play – are ceding ground to categories dependent on distance. Analysis using the PGA TOUR's "strokes gained" statistics lends empirical value to such worries. Strokes gained, developed by Columbia professor Mark Broadie, measures a player's performance against the rest of a tournament field within an isolated aspect of the game such as putting or play off the tee (Sens, 2018). For example, during the 2019 season Rory McIlroy averaged 1.195 strokes gained off the tee. In an average round, his prowess driving the golf ball gained him 1.195 strokes compared to the average competitor's play off the tee, summing to 4.78 strokes per 4-round tournament. Figure 1 plots the average Strokes Gained off the Tee ranking for the Top 10 PGA TOUR players over the last ten seasons. The chart shows the average Strokes Gained off the Tee ranking for the Top 10 players has improved, implying play off the tee has become a more crucial and integral skill for elite players. In Figure 2, analysis performed on driving distance leads to the complementary conclusion that distance off the tee is now a more important prerequisite to be an elite player.

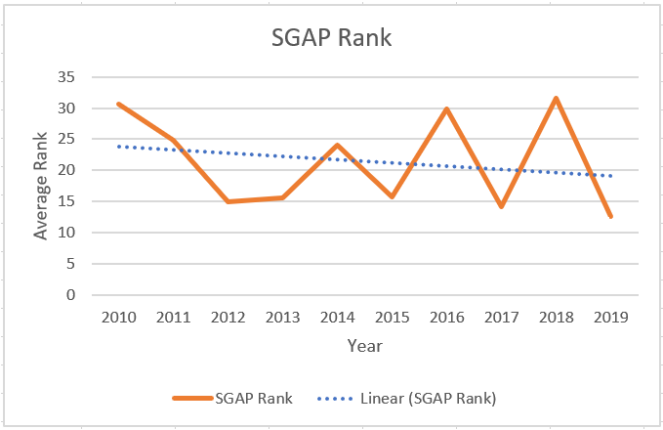


"*Figure 1.* Average Strokes Gained off the Tee Ranking for Top Ten players by year" (*Kaylor*, 2020)

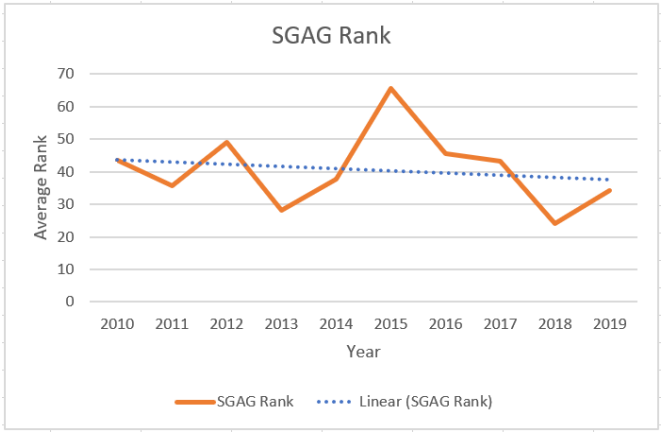


"*Figure 2.* Average Driving Distance Ranking for Top Ten players by year" (*Kaylor*, 2020)

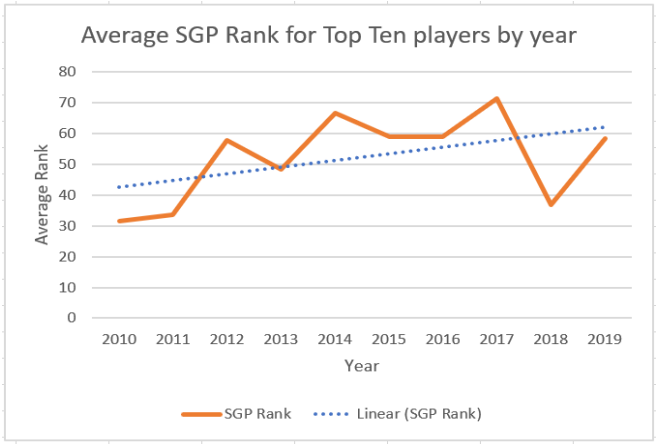
However, applying these methods to strokes gained categories unrelated to driving distance leads to either inconclusive or opposite findings. Figures 3 and 4, displaying approach play and around-the-green play respectively, show these two skills have not grown to be either significantly more or less important aspects of a Top 10 player's skillset. Most strikingly, Figure 5 demonstrates that putting has actually become a far less crucial component of an elite player's skillset since 2010. In summary, PGA TOUR strokes gained data proves it is becoming harder to compete at an elite level without prodigious length or ability off the tee, while being a top ranked putter is increasingly less essential for the best players in the world.



"*Figure 3.* Average Strokes Gained Approach Ranking for Top Ten players by year" (*Kaylor*, 2020)



"*Figure 4.* Average Strokes Gained Around the Green Ranking for Top Ten players by year" (*Kaylor*, 2020)



"*Figure 5.* Average Strokes Gained Putting Ranking for Top Ten players by year" (*Kaylor*, 2020)

To solve this issue, critics of distance proliferation point to two possible pathways, both centered on altering non-human elements of professional golf's actor-network. First, many argue course designs need to either become longer or more creative to adequately counter distance gains. Augusta National, annual host of the Masters Tournament, is a prime example of a course lengthened to accommodate distance. Since 1999, Augusta National has purchased over 270 acres of neighboring land – a 75% increase in acreage costing the club $200 million (Perino, 2019). While some of this land has gone towards infrastructure, other purchases had an explicit purpose of lengthening the course. Augusta's 13th hole, designed to be a "momentous decision" by architect Bobby Jones, no longer poses the same risk according to Augusta chairman Fred

Ridley (Hennessey, 2018). After a 2017 land purchase from a nearby course, plans for the 13th include rumors of extending the hole by 60 yards to restore Jones' vision (Michaux, 2017). However, several issues arise upon further examination of this lengthening strategy. First, there is great financial and environmental cost to expanding a course. More land results in both higher operating costs for a club and increased consumption of scarce water resources, harmful chemicals, and fossil fuels (USGA & Royal and Ancient, 2020). Second, as noted by Adam Scott and Tiger Woods in an earlier section, increased length is an arbitrary design feature that often fails to provide a sterner test. Finally, the vast majority of golfers are not the power players of golf's upper echelon – the USGA admits "some courses are too long for many amateurs" (Lusk, 2020). Golf's important human actors agree that for the vast majority of courses lacking the resources and elite professional focus of clubs like Augusta National, adding length is not a viable response to distance increases.

While length is not a design element course architects should focus on, other architectural features show more promise. In recent years, several courses have received widespread acclaim for adequately challenging professional golfers without grossly increasing length. Foremost among these is Australia's Royal Melbourne, host of the 2019 President's Cup. Tiger Woods was the event's best performer, but was "slightly below average" in terms of distance on a course where length played "secondary to guile, strategy, and variety" (Rapaport, 2019c). After the event, Woods said Royal Melbourne is "the perfect example of how a golf course should be set up" (Wood, 2019). Royal Melbourne, like most courses in Australia's sand-belt region, is characterized by firm and undulating fairways, fast and tricky greens, and expansive sand complexes. Not all US courses enjoy the same soil and topography as Royal Melbourne, but many still mimic aspects of sand-belt designs. Los Angeles' Riviera Country Club, annual host

of the PGA Tour's Genesis Invitational, has long been praised by writers and players for being one of the Tour's most complete tests. After the 2020 event, Golf Magazine's Alan Shipnuck called the distance debate "over … as long as we can play tournaments on Golden Age classics with firm, fast greens … petite Riviera more than held its own, thanks to a dry winter that allowed for a fiery setup" (2020). Three-time major champion Jordan Spieth said of the course: "It requires all parts of the game and a variety of ball-striking…an all around fantastic golf course that you don't get away with poor shots at all" (Porter, 2016). Riviera uses many design features – split fairways, elevation change, and bunker placement – forcing players to make difficult decisions on every shot, despite the course's relative shortness. Finally, Pinehurst No. 2 serves as an example of a championship caliber course redesigned to address distance and sustainability concerns. Prior to hosting the 2014 U.S. Open, famed architects Ben Crenshaw and Bill Coore overhauled the North Carolina course, restoring its original 1907 design. The redesign, which emphasized native areas consisting of sand and wiregrass instead of lush grasses, reduced yearly water consumption from 55 million gallons to 15 million (Gibbs, 2014). Former top-ranked player Luke Donald praised the many "different options" presented by the course ("Luke Donald," 2014). Architects and course set-up specialists have sustainably adapted many championship courses to the new era of distance by featuring firm and dry surfaces, challenging players with options and decisions, and using sand-based native areas instead of thick grasses. Royal Melbourne, Riviera Country Club, and Pinehurst No. 2 serve as templates for architects seeking to use non-human actors to better test the world's best players.

While a fresh perspective on course architecture is a viable solution to golf's distance issue, many participants in golf's actor-network also believe in the proposed roll-back of the golf ball. 18-time major champion and esteemed architect Jack Nicklaus has favored a game-wide

rollback since 1991, suggesting a reduction of the ball's initial velocity by 20% (Rapaport, 2019b). Modern professionals also support a full rollback – TOUR winner Peter Malnati advocates for a 10% rollback for all players (Shedloski, 2020), and three-time major champion Padraig Harrington "100% supports a rollback" for the sake of "great golf courses that can't be used" (Keogh, 2020). On the other hand, many actors disagree with the full rollback proposal, either believing there is no need to change the golf ball or that the ball should only be rolled back for TOUR players. Most equipment companies oppose a rollback at any and all levels. David Maher, CEO of Titleist's parent company Acushnet, issued a strong statement responding to the USGA's Distance Insights Project: "We believe the conclusions drawn…undervalue the skill and athleticism of the game's very best players…furthermore, we believe that existing equipment regulations effectively govern the prospects of any significant increases in hitting distance by the game's longest hitters" (2020). Taylormade CEO David Abeles took an identical stance: "The Taylormade Golf Company firmly opposes any potential roll back of product performance…we believe these movements will be detrimental to the game at every level…it would be disadvantageous to the growth of the game" (Stachura, 2018). Four-time major champion Brooks Koepka is one of few players on record opposing the rollback, believing this would only increase the disparity between short and long hitters (Rapaport, 2019a). However, apart from manufacturers and Koepka, momentum seems to be growing behind a bifurcation policy, in which recreational amateurs would continue using the modern golf ball while elite players would use a reduced-distance golf ball. The 2020 USGA Distance Insights Project proposes a local rule in which golf clubs or tournaments would have the option to "specify use of clubs and/or balls intended to result in shorter hitting distances" (USGA & Royal and Ancient, 2020). Bifurcation has gained widespread traction with PGA TOUR players, who liken it to Major League

Baseball's continued use of wooden bats as all lesser levels of baseball use metal bats. Per Tiger Woods, "I see no reason why we can't be like baseball and have a line of demarcation between college or amateur and the professional ranks…every professional would have to play a reduced-flight ball" (Porter, 2017). Golf Channel's Jaime Diaz, an esteemed voice in the game, has even said an agreement on bifurcation would "unshackle the game from its current equipment conundrum" (2020). The proposed rollback of the golf ball has invited highly-varied opinions from a wide array of human actors, but consensus is starting to build behind bifurcation policy.

Actor Network Theory helps unpack the cacophony of perspectives surrounding distance gains in golf, specifically pertaining to the proposed golf ball rollback. Most actually agree course architecture is an effective means to better challenge the game's best players without punishing amateurs. Game-wide consensus is not a barrier to overhauled course designs to the same degree creative inertia or overall cost might be. A small minority simply prefer the lush aesthetic of a traditional setup, and reshaping properties spanning many acres will cost time and money. The same consensus does not exist regarding the golf ball, and the USGA will spend the coming years leveraging the interests of golf's diverse stakeholders. For some, the concern is financial. Manufacturers use Tour players to promote their golf balls, and the chance a high-profile endorser could either be using a weaker product or a different product from their customer base threatens their marketing power. Additionally, companies tout distance as a main selling point for their product, and any changes to the USGA's ball specifications threatens the appeal created from years of innovation. Others consider distance to be good for the game's image– the PGA TOUR can market itself as young, dynamic and powerful because of distance gains. The Tour, responding to the USGA's Distance Insights Project, is only interested in solutions "benefitting the game as a whole without negatively impacting the TOUR, its players,

or our fans' enjoyment of the sport" (Associated Press, 2020). For this reason, Jaime Diaz foresees a reality in which the PGA TOUR rebuffs a USGA rollback for its branding's sake, allowing a full distance ball for all events except the four major championships governed by the USGA, creating an undeniably awkward rift between the game's two most influential entities (Diaz, 2020). Finally, TOUR players fear their voices are lost within the vast actor-network controlled by the USGA. Most players distrust the USGA has their best interests at heart, a dynamic described by five-time major champion Phil Mickelson: "I struggle with some of our governing bodies… we are the only professional sport in the world governed by a group of amateurs…that leads to some questionable directions" (Beall, 2020). Within distance gains, golf's actor network is marred by financial interest and relational discomfort. The technological elements of this network such as the golf ball are intertwined with the divergent interests of several institutions; unpacking the contention within golf's actor network is an important task for the coming years.

Further STS research of distance gains on the PGA TOUR is crucial. A hole in current research acknowledged by the USGA is the sparseness of data on amateur distance. Collecting this information will help the USGA and other governing bodies determine if distance gains are truly a universal phenomenon or if they are confined to the PGA TOUR, which would be a critical insight for those proposing golf ball bifurcation. Additionally, the attitudes of golf fans have not been documented. While it is reasonable to assume fans prefer more excitement and competition, the characterizations of fan perspectives by the TOUR, media personalities and equipment companies are largely hearsay. Empirically investigating what golf fans truly prefer is an important direction for further research. Finally, many other sports have been influenced by wide-sweeping changes to rules or equipment policies. The National Basketball Association's

introduction of the three-point line or the MLB's continued use of wooden bats could serve as insightful analogies for golf's governing bodies as they consider separate strategies and their ramifications. This thesis is an effective launching point for considering the PGA TOUR's distance debate, and raises interesting questions to be contemplated by further analysis.

Conclusion

In response to the growing problem of distance gains on the PGA TOUR, golf's governing bodies should promote more innovative course design and attempt to build consensus behind a rollback of the golf ball. Courses employing design elements such as firm and dry surfaces, tricky decision points, and native, sandy areas provide both a robust and sustainable test for the world's best golfers. Ultimately, the proposed rollback of the golf ball has the potential to be an effective solution as well. However, the competing interests of golf's most important stakeholders such as players, the PGA TOUR and equipment companies must be reconciled before the USGA attempts to impose any rollback policy. This thesis provides a comprehensive background of distance gains on the PGA TOUR, provides insightful frameworks to help decision makers navigate a complex actor-network, and discusses the merits and drawbacks of proposed solutions.

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