THE EVOLUTION, EXPANSION, AND EFFECTS OF INTELLECTUAL PROPERTY RIGHTS AT AMERICAN HIGHER EDUCATION INSTITUTIONS: A HISTORICAL CONTEXT OF LEGISLATION AND CASE LAW AT HARVARD AND YALE UNIVERSITIES

by

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Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

This dissertation used a historical research method to examine the rise of the centuries-long complex construct of intellectual property ownership through the lenses of American institutions of higher learning and the American legal system, the latter of which attributing its involvement in intellectual property rights once the principle of ownership became equated with the profit of ownership. Because universities are the traditional factories for innovation, this phenomenon within this expanse of time can be better understood by focusing on two historical research institutions. The universities of Harvard and Yale were explored due to their operational and intellectual property experiences mirroring the emergence of intellectual property ownership laws in America. Harvard University and Yale University have a shared history and have both gone from simple seminaries producing regional ministers to conglomerates producing research and development that yields potentially lucrative innovations.

The purpose of this historical study was to describe how university intellectual property ownership interests began and how these contributed to, and interacted with, case law and legislation ultimately giving rise to the commercialization of collegiate-driven knowledge at the colonial colleges of Harvard and Yale. This study used historical documents such as seminal legal cases specific to Harvard and Yale, as well as, intellectual property rights legislation, supporting case law, and various texts. These, along with theory and secondary sources, provided a foundation for an ideological and cultural study of intellectual property ownership rights within two American higher education institutions.

Keywords: intellectual property rights in higher education, intellectual property law, higher education law, Harvard lawsuits, Yale lawsuits, Harvard history, Yale history

Copyright Page

Dedication

This dissertation is dedicated to many. First, I dedicate this work to my cherished family – my husband of nearly 31 years, Stephen Shipley, MBA, BA; my son, Stephen Charles Shipley, II., MA, BS; my daughter, Laryssa Antoinette Shipley, PhD Candidate, MA, BA; my son, Scott Christian Shipley, JD Candidate, BBA; and, my son, Sean Carson Shipley, BS and soon-to-be master's degree student. You are each my beating heart.

To my children: being your mother will always be the accomplishment of which I am most proud. Your precious lives, and every little thing about you, exceed anything your father and I could have ever imagined. You were always wonderful children and now you have become incredible adults. You are unconditionally loved and I am so proud of each one of you – not because of what you have done, but because of who you are. Thank you for all of your love, support, and sacrifices so that I could fulfill this goal.

To my husband: we did it. By the grace of God, in one generation, we have used education to change the trajectory of our family so that it more closely aligns with the lives, accomplishments, and faith traditions of our extended family members and mentors. Thank you for your abiding love and the steadfast belief in the life that we could build together. I cannot imagine walking life's journey with anyone other than you.

Second, I dedicate this research to our extended family members and family friends who were always in the background as quiet role models demonstrating the true value of education is in the doing, not in the saying. Your higher education experiences; scholarly pursuits; professional achievements; cultural interests and contributions; community involvement; respectful and calm demeanors; and fearless, steady, and mature faiths culminated into

beautifully balanced lives. I remain enraptured and enriched by your examples. Thank you for exposing me to a world of possibilities.

Third, I posthumously dedicate this dissertation to my supportive father who passed away in 2002. My father was always actively interested in what I was researching and considering for my career. It was very important to him to have a daughter who could support herself. I miss our conversations and I miss him. I also dedicate this work to my mother and thank her for instilling in me the strongest of work ethics and for giving me 10 years of piano lessons, without which I think my fingers would have long fallen off from typing.

Fourth, I dedicate this work to all women, especially mothers, who are in doctoral programs. You are striving to better yourself and achieve a traditionally, male-dominated goal while supporting your spouse, guiding your children, and loving each one as if they are your sole focus. During your doctoral program, holidays and birthdays have been celebrated; memories have been created; moves have been orchestrated; unexpected news has been dealt with; health issues have been addressed; jobs have required attention; prior commitments have continued; household projects have been undertaken; the ugliness of politics has been witnessed; futures have been worried over; and you have survived a pandemic (and everything that goes with it). You are tired. You study, write papers, research, and read late into the night so that everything gets done and everyone else's life feels as normal as possible.

Perhaps you have people in your life who you thought would support you but who may actually resent the time and energy you put into your doctoral program. These people might grow uninterested or impatient with your educational endeavors. Or, they may act perplexed that you would even desire this goal in the first place or even try to make you feel guilty about focusing on yourself. Or worse, they may continually feign forgetfulness that you are in a

doctoral program altogether. I know this can be disheartening and disappointing. However, this is just manipulative noise – a distraction intended to refocus your attention back on them, and in so doing, give up on your doctoral goals. Remember this: if you feel God is blessing your efforts and has brought you this far, have courage. You have all the support you need. Do not allow negativity to interfere with what you are trying to achieve. Persevere. Keep going and know that you are only defeated if you quit. Never quit. Know that you have sisters out there who are thinking of you, pulling for you, and regularly praying for you. If we can do it, you can, too.

Fifth, and finally, a somewhat silly dedication is reserved for our family's two little dogs, Miguel and Tulio. Every day, my "muses" evoke lots of laughter; and, while working on this dissertation, they provided hours upon hours of loyal companionship.

Acknowledgments

At Liberty University, I have been blessed with many helpful and encouraging professors. A very special thanks is given to Dr. Jeffrey Savage for all of the one-on-one time spent in helping me get my doctoral program off to a solid start. Also, I offer my sincerest thanks to Dr. John R. Duryea, Dr. Timothy J. Fobbs, and Dr. Gary Smith. Each of whom agreed to my interviewing them; and, each imparted valuable information and advice that carried me through my program. Thank you all for the impact you had on my doctoral journey.

Additionally, my deepest thanks are directed to my dissertation committee chair, Dr. Travis H. Bradshaw. I am indebted to you for all of your help, support, and counsel. Thank you for sharing your expertise with me, advocating for me, and believing in me. I also wish to sincerely thank Dr. J. Gregory Lawson for joining my dissertation committee and offering your polymathic insight and guidance. Next, a special note of thanks is given to Dr. Kurt Michael for his wisdom and leadership in approving the School of Education's first historical analysis Ph.D. dissertation. I hope you are pleased with the product.

Lastly, a posthumous acknowledgment is designated for Mr. Robert H. Mullen, my father's best friend and my "godfather." Even though he passed away in 1993, he knew this day was coming and unbeknownst to me, set aside a trust fund to finance it. I am forever grateful. I thank him for being a part of my life from the first day I drew breath until the last day of his own. He and his mother, Mrs. Annie Bea Mullen (an educator who was ahead of her time with her independent personality and own educational pursuits) have had a lasting impact on me.

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CHAPTER ONE: INTRODUCTION

Overview

At its core, innovation is the propelling of an idea from the mind into the shared human experience. Once flung from its cerebral sanctuary, the exposed innovation takes on various forms representing art, music, literary works, theater, dance, scientific discoveries, medical breakthroughs, and new technologies (Landes & Posner, 2003; World Intellectual Property Organization, n.d.). Each of these original creations wishing to weave itself into the fabric that becomes humanity's culture and desiring to make a significant statement or an impactful difference. For the past several centuries, innovations have been birthed within the confines of university walls – a place where creativity and research naturally meet. Their product, intellectual property, has grown into an essentially contested, or at least a contestable, concept (Clarke, 1979; Gallie, 1956). Because of the complexities surrounding the construct of intellectual property, its very existence has been debated. Understanding that property of the imagination does not equate to imaginary property is essential for grasping the totality of this analysis and determining what produced intellectual property rights interests and how these contributed to legislation and case law, which moved Harvard and Yale from former colonial colleges to modern commercialized enterprises. Therefore, this first chapter is foundational and introduces the historical, social, and theoretical bases for the intellectual property construct. Next, the context of this historical study is addressed in the problem statement section. The purpose statement follows and indicates the intentions of this research. The significance of the study and central research question are then relayed. The remaining sections include an explanation of historical research methods and definitions of relevant terms. Finally, the chapter concludes with a summary.

Background

In 1774, an Edinburgh, Scotland lawyer described intellectual property as nonsense (Boswell, 1774). Similarly, the contemporary French-Swiss film director, Jean-Luc Godard famously remarked about his work, "There is no such thing as intellectual property" (Gibbons, 2011). To help bridge the concept of innovations of the intellect towards something more tangible, the term "property" was assigned to the construct (Khong, 2006). Purposefully identifying the construct as property gives the connotation that intellectual property is as real as its physical property counterpart and legal protections and remedies should be expected by the owner(s) (Khong, 2006). This interplay of law and language is imperative as it balances the purpose of intellectual property development: to promote intellectual property innovation through the use of protective rights while ensuring these rights are not so restrictive that they inhibit intellectual goods from reaching the marketplace (Goldstein & Reese, 2008). Legal discourse, such as this, embodies power and ownership grants considerable control (Cohen, 1935). These elements create an economic potential for the innovation, thereby incentivizing intellectual property ownership disputes for the generating institution. Supporting the foundation upon which this research is built are historical, social, and theoretical footings. Together, these provide the background as to how the intellectual property construct has (a) historically evolved over time, (b) given rise to changing social environments, and (c) been underpinned by theoretical principles.

Historical Basis

"The American law of intellectual property can be fully understood only if its roots are known, and court decisions in this field have examined these roots again and again for guidance" (Bugbee, 1967, p. vi). Because understanding the historical roots of intellectual property is

imperative for grasping intellectual property case law and legislation discussed in subsequent chapters, the historical basis of the intellectual property construct is necessary for this analysis.

As long as humans have inhabited the planet, they have been creating – whether out of necessity, obligation, curiosity, connectivity, ritual, self-expression, or fulfillment (Fogarty, Creanza, & Feldman, 2015; Morriss-Kay, 2009; Plato, 375/2003). Each circumstance giving individuals the opportunity to make their presence known, leave their mark, and remind future generations that at the time their creative work was produced, they were living at the height of civilization. Examples span centuries and include prehistoric cave art depicting drawings and recording pictorial stories; decorative jewelry using bone and minerals; increasingly ingenious Stone Age cookware, tools, and weaponry; and sophisticated mathematically based renderings for structures like Khufu's Great Pyramid at Giza – gracing the sandy Egyptian horizon since 2560 BCE (Collins, 2001). Also, there are various ancient literary works such as the Bronze Age's Sumerian poem the "Epic of Gilgamesh;" the Greek Tragedian Sophocles' plays, like "Oedipus Rex" in 429 BCE; and research and world knowledge documented on thousands of papyrus scrolls collected and archived at the Library of Alexandria beginning in 283 BCE (Dalley, 2000; Erskine, 1995; Knox, 1956). Additionally, there are numerous examples of technological and medical discoveries. Two of which are the Antikythera mechanism (an early analog computer) and important advances in anatomy and neurology made in 162 CE by the Roman Empire medical and philosophical researcher Galen of Pergamon (modern day Turkey) who expanded upon the earlier work of Hippocrates (Nutton, 1973; Swedin & Ferro, 2007).

Further into the Common Era, the ancient Old English poem of "Beowulf" was drafted sometime between the 8th and 11th centuries followed by Geoffrey Chaucer's "The Canterbury Tales" in the late 14th century (Chase, 1997; Pearsall, 1992). A surge of significant scientific

discoveries, magnificent works of art, memorable works in literature, technological breakthroughs, and unique innovations would ensue. The collective, of which, begetting the first modern inclination towards ownership of intellectual property.

Medieval creations. While there were claims seeking intellectual property legal protection for specific creations during the Middle Ages, the circumstances surrounding these claims fall short of meeting the contemporary interpretation of the purpose of intellectual property law, which is to promote progress (Bugbee, 1967; Dumbauld, 1968; U.S. Const. art. I, § 8, cl. 8). Therefore, the modern concept of one's innovative work (a) being assigned ownership rights, (b) potentially receiving economic compensation, and (c) spurring further innovations for the benefit of society is a root that would not emerge as a stem until the Age of Discovery – the Renaissance Era.

Italian Renaissance patents and copyrights. In 1421, a Republic of Florence architect, Filippo Brunelleschi, created a new system for loading cargo on ships sailing the Arno River (Bugbee, 1967). His contraption was ingenious to the point that he sought legal protection for his design and product. On June 19, 1421, Brunelleschi was awarded the first true patent for invention (Bugbee, 1967). Five decades later, a codified patent system was established in the Republic of Venice with the Venetian Patent Statute on March 19, 1474 (Ladas, 1975). This statute provided patent protection for those who created an entirely original and innovative device (Ladas, 1975). Following the Venetian Patent Statute, the Republic of Venice government recognized the need for copyright protection, as well. On September 1, 1486, the first copyright was awarded to author Marco Antonio Sabellico (Marcus Antonius Sabellicus) for "Decades rerum Ventarum" translated from Latin to English as "Decades of Wind," which was Sabellico's history of Venice (Bugbee, 1967). Some one hundred years later, the concept of

owning intellectual property crossed the English Channel into England. Another Italian, Jacopo Aconcio, a former law student and secretary to the Catholic Cardinal/Milan Governor Cristoforo Madruzzo became interested in the Protestant Reformation (O'Malley, 1945). Fearing his feelings could lead to charges of heresy by the newly installed Pope Paul IV, he fled to Switzerland in 1557 (O'Malley, 1945). There, he learned engineering from English tradesmen (the Marian exiles) who had escaped persecution under the fervently Catholic, Queen Mary. Upon Mary's death, her half-sister Queen Elizabeth I ascended to the throne. This Protestant monarch recruited engineers, like Aconcio, to strengthen strongholds along the English and Scottish border (White, 1967). Once there in 1558, Aconcio requested Queen Elizabeth I grant him a patent for his water wheel machine used for marsh draining and dredging in 1558 (Bugbee, 1967; White, 1967). On September 7, 1565, the patent was finally issued, leading the way for the Statute of Monopolies Act of 1624 and laying the foundation for the English patent system (Bugbee, 1967). Not until 1710 would copyright be officially recognized with the Copyright Act of 1710/ Statute of Anne (Bugbee, 1967). The increased use of the printing press necessitated moving copyright ownership protections from the private sector into regulatory oversight provided by the government through parliament and the judiciary (Patterson, 1968). Hence, because of the proactivity of Brunelleschi, Sabellico, and Aconcio, the origin story of patent and copyright ownership rights belongs to the Italians.

Colonial America's patents and copyrights. By the time England began colonizing the Atlantic coast of North America, the English patent system was functioning and issuing patents. For the colonies, though, the process was to be completed within each colony through the relevant governing body. Therefore, when Samuel Winslow, of the Massachusetts Bay Colony, invented a new method for processing salt, it was the Massachusetts General Court in Boston

that reviewed his petition for a patent (Bugbee, 1967; Cortada, 1998). On June 2, 1641, Winslow's patent (with a limited duration of ten years) became the first patent issued in the New World (Cortada, 1998).

Regarding colonial copyrights, these would occur much sooner than those granted in England under their Copyright Act of 1710/ Statute of Anne. On May 15, 1672, the Massachusetts General Court once again made intellectual property ownership history by issuing the first copyright granted in any of the colonies (Bugbee, 1967; Patry, 1994). It was issued to John Usher, a Boston bookseller who petitioned the Court for printing privileges (Bugbee, 1967; Patry, 1994). He intended to print the laws of the colony; however, he was concerned that other publishers may try to print the laws, as well (Bugbee, 1967; Patry, 1994). To mitigate market undermining, Usher sought legal protection. The Court viewed this printing privilege (with its seven-year duration) as a societal benefit, thereby introducing the modern concept of copyright to the colonies (Bugbee, 1967; Patry, 1994). While Winslow's patent and Usher's copyright were the first of their kind in Colonial America, scores more would immediately follow.

By 1775, while still a senior at Yale, David Bushnell invented not only a novel contraption, but one that had practical defense applications (Kelly, 2013). Bushnell contrived the first combat submarine - a one-man, pedal-powered submersible vehicle called "Turtle" (Kelly, 2013; Swanson, 1991). Along with Bushnell proving that gunpowder could explode under water and his spiral propeller invention, "Turtle" was designed to stealthily approach a British ship (Swanson, 1991). Once there, the submarine pilot could use an auger to drill a small hole in its hull. Into the hole, a time bomb could be inserted (Swanson, 1991). The hope was that the explosion would significantly cripple the British ship. Unfortunately, it malfunctioned on its

first day of use and was brought back into the New York Harbor where it was discovered by the British and sunk (Swanson, 1991).

A new nation. The American Revolution not only brought novel ideas on the formation of a more perfect union based on liberalism and republicanism, but it also expanded on the value of independent ownership (Adams, 1776; Locke, 1689; Paine, 1776). These intellectual property expressions resulted in federal legal protections for patents, copyrights, and finally, trademarks.

Patents and copyrights. On March 26, 1784, the first general patent system was created by the state of South Carolina entitled, "An Act for the Encouragement of Arts and Sciences" which gave legal patent protection for the duration of 14 years (National Research Council, 1993). In the years between the declaration of this nation's independence from England in 1776 and the drafting of its eventual Constitution in 1787, several states followed the recommendation of the Continental Congress of 1783 to embrace the Natural Rights advocated for by Locke's (1689) theory of life, liberty, and happiness and reiterated by Thomas Jefferson in his enlightened draft of the Declaration of Independence (Bugbee, 1967). Accordingly, James Madison and the Committee of Detail addressed intellectual property in Article I of the Constitution by giving Congress the power "To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries" (U.S. Const. art. I, § 8, cl. 8). This exact verbiage was agreed upon sans debate and still speaks to the overall objective of Congress, which is to promote the progress of society (Bugbee, 1967; U.S. Const. art. I, § 8, cl. 8). With the Constitution now complete and the new nation's independence secure, Congress passed two pieces of intellectual property legislation in 1790. On April 10, President George Washington signed into law America's first federal patent law; and, one month later, on May 31, the first federal copyright

law, the Copyright Clause, followed (Bugbee, 1967). Since then, revisions to both laws have been repeatedly revised; although, the grounding protection of granting exclusive rights to the creator for a specified amount of time has remained constant.

Trademarks. Originally, colonial Common Law, and then various state laws and even international treaties, provided citizens of the new republic a measure of protection for trademarks. The notion, though, of a federally protected trademark would be brought forth by a Boston sailcloth manufacturing group in 1791 (Jefferson, 1903). This group petitioned Congress and their request was forwarded to Secretary of State, Thomas Jefferson. Secretary Jefferson recommended a trademark be issued through the Commerce Clause, which would have given exclusive rights to the trademark holder and encouraged interstate commerce (Jefferson, 1903). Despite this logic, Congress would not fully take up the matter of trademarks until decades later. Once on the other side of the Civil War in 1870, and while revisions were being made to the patent law and copyright law, Congress passed a trademark statute as part of the Copyright Clause (Patry, 1994). This statute, though, was ruled unconstitutional by the Supreme Court one year later, which sent Congress back to mull over the trademark protections once again (Patry, 1994). This time, they took Jefferson's previous recommendation under advisement and passed the Trademark Act pursuant to the Commerce Clause (Patry, 1994). It would be revised again in 1905. In 1946, the Lanham Act gave the United States Patent and Trademark Office (USPTO) the authority to register all trademarks (Brown, 1999).

Trade secrets. Finally, to round out this historical basis of intellectual property ownership, trade secrets must be included. The necessitation of modern trade secret ownership rights would first become apparent in England in 1817 by way of Newbery v. James (Steiner, 1905). This lawsuit brought attention to trade secrets; however, only damages were awarded

(Steiner, 1905). Similarly, in the United Sates in 1837, Vickery v. Welch resulted in an award of damages only (Steiner, 1905). Injunctive relief, or an injunction, would be made available for plaintiffs at subsequent trade secret trials. The legal remedy of an injunction goes beyond the award of monetary damages (if any) and, by court order, protects against irreparable harm from occurring if a specified act or behavior by the defendant is allowed to continue (Black, 2016). These are usually indicative of extreme circumstances and are nowadays subject to an immediate review by an appellate court in a preliminary injunction (Black, 2016). The first injunction was used in England in 1820 in the trade secret case of Yovatt v. Winyard (Steiner, 1905). In the United States, it would not be until 1866 in Taylor v. Blanchard that an injunction would be sought (Steiner, 1905). From here, states increasingly created laws to address trade secret protections. In 1939, all of the states' trade secrets legislation were compiled into a reference work by the American Law Institute entitled the Reinstatement of Torts (Sandeen, 2010). Forty years later, in 1979, many states adopted the Uniform Trade Secrets Act. Stealing trade secrets, however, did not become a federal crime until 1996 with the Economic Espionage Act.

In 2016, federal provisions were finally given by the enactment of the Defend Trade Secrets Act. The effect of this federal law was threefold: (a) it finally addressed the misappropriations of trade secrets, thereby allowing prosecutions to be pursued in a federal court, (b) it allowed for the preliminary seizure of property associated with the spreading of the trade secret, and (c) it provided additional legal remedies in the form of royalties, exemplary damages, and broad injunction powers to be used at the federal government's discretion (Sandeen, 2010). This law not only pertains to trade secret misappropriations occurring within the United States, but it extends liability to those incidents occurring outside of the United States, as well (Sandeen, 2010).

Moving from the historical basis of intellectual property ownership, the social and cultural factors of the Puritans who would create the colleges that would one day benefit from holding intellectual property, is examined next.

Sociocultural Context

Critical to a deeper understanding as to what produced intellectual property rights interests and how these contributed to legislation and case law moving the institutions of Harvard and Yale from seminaries to syndicates, a transition from the historical basis of intellectual property ownership to an analysis of the sociocultural environment is necessary. For the founders of the colleges of Harvard and Yale, this milieu includes their (a) physical setting, (b) religious attitude, (c) social setting, (d) education pedagogy, (e) economic system, and (f) political ideology. Together, these establish context for the intellectual property construct.

Physical setting. Motivating a move from England's undulating landscape of the southeast and the rolling hills of the west to the craggy shores and forested inland of New England was the hope of religious freedom. Crossing the rough Atlantic waters and relying on prayers and immune systems to ward off on-board illnesses, a completely natural setting awaited the Puritans. As far as their weary eyes could see, not a single human-made permanent structure was visible (Gatta, 2004). The sight, while daunting, must have beckoned the imaginings of possibilities. The void of physical property did not last long. Immediately, the group set about bending the land to their will and carving a new life in this new land. It was 1630; and, unlike many failed colonies before them, the Puritans moved entire family units en masse (Gatta, 2004). Willing to risk safety and stability, the new inhabitants to this new world were met with uncertainty by the Indigenous population. While the English Puritans claimed this virgin land as their own and viewed their colony as a "shining city upon a hill," the Native Americans would

not have a reference point for understanding the Puritans' feelings of exceptionalism, their nod to Israel, and Jesus' Sermon on the Mount parable of salt and light found in Matthew 5:13-16 (Bremer, 2003; Winthrop, 1630; Winthrop, Dudley, Allin, Shepard, & Cotton, 1696).

To this land's original caretakers, the Puritans' arrival would have felt like a jarring intrusion upon their land, culture, and people. Tentativeness turned to tension, yielding an incredibly complicated relationship spanning centuries. Nonetheless, this land would become the Massachusetts Bay Colony - property chartered by England. Six and eight years later, the Connecticut River Colony and New Haven Colony were established, respectively, making the Puritans' providential lands their permanent homes and furthering this foreign soil into resembling the towns they left behind (Winthrop et al., 1696). This time, though, there were two salient distinctions. Here, they could pursue promising land investment opportunities and fulfill a covenant to worship as they pleased (Winthrop et al., 1696).

Religious attitude. A seemingly evident, yet entirely radical, concept set into motion enormous religious, intellectual, cultural, and political changes: priesthood of the believer. This upheaval resulted in the 16th century European Protestant Reformation Movement led by Martin Luther of Germany, John Calvin of France, and King Henry VIII of England, among others who all questioned the Catholic's Church's sole authority in determining Christian practices (Marshall, 2017). According to Brigden (2000) and Scrisbrick (1997), though, Henry VIII's interest in the English Reformation originated primarily from his eagerness to dissolve another marriage due to deeming his wives as problematic to his fathering three daughters and losing eight sons. According to Scrisbrisck (1997), the Reformation provided a convenient work-around from having additional wives beheaded or having to lower himself to seek papal

permission for further annulments. With England joining the Reformation, the Church of England was created, and King Henry VIII placed himself at its head (Marshall, 2017).

The Puritans who would colonize Massachusetts would have been this generation's children and grandchildren. They were among a sect of Protestants who held that the Church of England did not reform fully enough (Marshall, 2017; Spurr, 1998). The Puritans wanted to go beyond not having a priestly mediator and move towards ridding the church of the many formal traditions, ritualistic practices, and Catholic symbols that still lingered inside the Church of England (Spurr, 1998). Therefore, the Puritan objective was to purge and purify their church and practice biblical doctrine with precision (Spurr, 1998). Like the Pilgrims, the Puritans were Calvinists (Wallace, 2004). They adhered to a belief system that meant Jesus did not die for all who accepted and believed in Him, but rather He died only for those who God had preselected (Wallace, 2004). Further, communion was only for those they regarded as worthy (Spurr, 1998).

Despite Pilgrims and Puritans both believing in the congregationalist way (a democratic and autonomous way of conducting itself through a covenant with God), the two sects diverged in how they viewed their role as parishioners of the Church of England (Collier & Collier, 2012). Pilgrims were Separatists who wanted to separate completely from the Church of England; therefore, they began worshipping externally and in secret, which was a punishable offense since every citizen was required to attend services at their local Anglican church (Collier & Collier, 2012). This would ultimately motivate their move to the Netherlands and later to the Plymouth Colony (Collier & Collier, 2012). By contrast, the Puritans were Congregationalists and presumed they could change the Church of England by remaining members and influencing an internal change towards the congregationalist way (Collier & Collier, 2012). Eventually, they, too, turned their eyes towards America; and, when given the opportunity to colonize a new land

that could yield favorable investment returns and enable them to commence their worship without close oversight, they took it (Spurr, 1998). The idea of starting over was appealing, especially with their earning questionable reputations in the eyes of the Anglican majority (Lund, 2001).

Social setting. Prior to their making landfall in Massachusetts, an appreciable social stigma enshrouded the Puritans in their homeland of England (Lund, 2001). Contrary to the Puritan's claims of following God's Word with precision, the reality demonstrated by the Puritans' social behavior ran afoul of biblical teachings. According to Lund (2001), they were regarded as suspicious due to their questionable, but acceptable, practices of being "deceptive, dishonest, and crafty" towards their English Protestant peers (p. iv).

Meaning "peace" in Hebrew, once docked on the shores of "Salem" to establish the Massachusetts Bay Colony in 1630, the Puritans embraced their new-found dominance over all social structures (Winthrop, 1997). This clean slate enabled them to not only continue their Puritan-approved activities, but also explore new ones. Laws and traditions crossing the Atlantic included requiring church attendance all day on Sundays; capitalizing on chattel slavery; viewing marriage as a social contract rather than a religious covenant, which kept potential divorces uncomplicated; and practicing bundling prior to marriage, which caused one in 10 females to give birth to full-term infants within the first eight months of their marriages (Foster, 1999; Spurr, 1998; Stiles & Aurand, 1928; Warren, 2016).

Believing that they shared an exclusive covenant with God causing them to be directly accountable for all social interactions within their new community, pressure from erring (or even perceived erring) from Puritan norms became a catalyst for new customs (Main, 2001; Pestana, 1983). Some examples of these include a persistent opinion that Quakers were heretics who

believed in gender equality, and as such, must be kept out of Boston (Pestana, 1983). If caught within the town, punishment in the forms of ear amputation, imprisonment, and death was swift – until England intervened and told the Puritans that all Christians were to be treated fairly (except those who practiced Catholicism) (Pestana, 1983). Additionally, those Puritans found guilty of engaging in adulterous acts were punished by execution (Main, 2001). Additionally, celebratory activities, such as celebrating birthdays, were not allowed. The World Book of Encyclopedia Volume Three (1993) traces this to "The early Christians did not celebrate His [the Messiah's] birth because they considered the celebration of anyone's birth to be a pagan custom" (p. 416). This created a two-pronged complication for the celebration of Christmas. It was not only the celebration of a birth, but it also was placed on the calendar to coincide with the existing present pagan feast of Saturnalia in order to help people seamlessly transition from the old pagan festivity to the new Christian one (Daniels, 1995). Hence, the court order, "Penalty for Keeping Christmas" (1659) outlawed all Christmas celebrations, decorations, and caroling in the Massachusetts Bay Colony. Disobeying this directive resulted in a fine of five shillings; dishonoring God was given as the reason (Daniels, 1995).

As much as God was at the forefront of their minds, so, too was Satan. Because they held that the devil could physically walk among them, women posed a greater danger to society than men (Bremer, 2009). The pertinacious thought was since women were weaker in mind and body, they could fall from grace more easily. The hierarchy of their social structure was men were inferior to God and women were inferior to men (Evans, 1997). Other social threats beyond the omnipresent devil, were fairies, witches, and creatures from folkloric stories (Kramer & Sprenger, 1486). This created a social environment where religious symbols used in conjunction with God, church, and worship were forbidden while apotropaic symbols were

widely accepted as a home's primary defense against intrusion of witches (Kramer & Sprenger, 1486). With superstitions running rampant, it is not surprising that the Puritans' daily lives were centered on a careful balance of fear and faith.

Education pedagogy. Back in England, the University of Oxford (n.d.) began its 534th year of operation; 20 years had passed since Galileo Galilei sighted four of Jupiter's moons; 14 years had passed since the untimely death of William Shakespeare, but not before his basing "The Tempest" on the Pilgrim's Stephen Hopkins failed attempt to settle Jamestown, Virginia; and The British Civil War was imminent, which resulted in the execution of King Charles I in 1649 (Kelsey, 2003; Shakespeare, 2000; Sharratt, 2008). Elsewhere around the world, it had been 200 years since Johannes Gutenberg of Germany invented the printing press, which is credited with increasing literacy across Europe and 120 years since Michelangelo painted the ceiling of the Sistine Chapel (Febvre & Martin, 1997; Pfisterer, 2018). Further into the 17th century, the Palace of Versailles would undergo a major remodel and Isaac Newton became a professor at the University of Cambridge (Lacaille, 2012; White, 1998). These intellectual milestones and achievements are some of which the educated Puritans would have been well-aware. It only makes sense, then, that within six years of setting foot on their new land, they would recognize the importance of combining their past and emerging cultures through education.

Gutek (1995) describes education as "a process that attempts to ensure the cultural continuation of group, race, or nation… it transmits skills, knowledge, modes of inquiry, and values from the mature to the immature" (p. 10). Unlike the Pilgrims who were largely illiterate, the Puritans placed a high value on education simply because literacy was essential for a deeper understanding of the Bible (Daniels, 1993; Demos, 1999; Education in Massachusetts Bay,

2020). Further, Daniels (1993) indicates that 60% of all colonial Puritans were proficient readers, which made them the most literate people in the world. By comparison, only 30% of the population in England was literate (Daniels, 1993).

Due to the integral nature of their faith, religious instruction was interwoven into all coursework and served as a motivation to help children, who were expected to behave as small adults, adjust to colonial life (Moran & Vinovskis, 1985). Because children were viewed as inherently flawed, much attention was spent on their moral training both at home and at school (Moran & Vinovskis, 1985). While all were educated, gender and social status determined the level of educational attainment (Bremer, 2009). In fact, any town comprised of 50 or more households was required by law to hire a teacher (Bremer, 2009). Instruction for boys of lower-class populations focused on reading, writing, and performing basic mathematical functions so that they were prepared to manage their future households and contribute to Puritan society (Cremin, 1970). This was the typical education available to girls, as well. For a fee, girls could attend a Dame School taught in the home of a female community member (Cremin, 1970).

Boys of upper-class families would have opportunities to go beyond the basic skills of reading, writing, and arithmetic. They would go on to study the Classics by learning Latin and Greek in potential preparation for higher education (Bremer, 2009). On April 25, 1635, the town of Boston established America's first, and longest running, public school (Rexine, 1977). Boston Latin School began by providing education for boys under the instruction of male teachers and under the supervision of Reverend John Cotton, who was the father of Increase Mather (eventual Harvard alumnus, pastor, and president of Harvard who was involved in the Salem Witch Trials) and grandfather of Cotton Mather (eventual Harvard alumnus and pastor who also influenced the Salem Witch Trials) (Rexine, 1977). Girls would have to wait until

1972 before being included in the Boston Latin School experience (Boston Latin School History, n.d.). It was from this school that many of Harvard's early students derived (Boston Latin School History, n.d.).

Because the Puritans deemed worship as a critical component of their daily lives, the need to found seminaries to produce ministers to serve the growing number of citizens soon became evident (Morison, 1935). Using the Geneva Bible and the European structure of universities as guides, Harvard, and later Yale, were established (Buckley, 2017; Morison, 1935). While most professions in the colonies did not require higher education training, those males wanting to explore other disciplines besides theology would return to England to pursue study at Oxford or Cambridge (Morison, 1935). At this point in colonial education, the construct of intellectual property and its eventual economic benefit to an institution was still in its infancy.

Economic system. It began as a joint stock company venture – an investment opportunity to own foreign land claimed by England. However, the majority of those emigrating claimed religious and political freedoms above economic opportunity (Hart, 1927). Many of these immigrants acquiring these new land holdings were descendants of economically affluential and politically influential English gentry (Hart, 1927). Most were wealthy in their own rights and were experienced merchants or skilled craftsmen who not only migrated with their wives and children, but also with their apprentices and servants (Hart, 1927). Clearly, they came prepared to establish the new colony's economy.

Realizing that dependence on shipments of goods from England was not sustainable, the Puritans began businesses based on fur trapping, lumber trading, barrel making, shoe cobbling, canning, wool spinning, fish mongering, and ship building (Hart, 1927; Labaree, 1979). Soon, trade was established with other colonies, England, and greater Europe. Timber was especially

desirable to England after repeated wars had diminished the Royal Navy's available supplies needed for ship masts (Labaree, 1979). According to the King's Mark Resource Conservation and Development Project, Inc. (n.d.), the colonies were home to the Eastern White Pine which grew from 150 to 240 feet tall and was light in weight, resistant to rot, and reliably strong, which made it an ideal ship mast. These trees were so crucial to the Crown that that their protection was explicitly outlined in The Charter of Massachusetts Bay of 1691 (Dane, Prescott, & Story, 1814).

Meanwhile, merchant ships shuttled goods abroad and intercolonial trade was conducted via the Indigenous people's trails turned to roads and river ferries (Hart, 1927). With trade established, regulations quickly followed so that standard guidelines could be followed that would reinforce ethics and fairness in business dealings. Weights and measures were utilized for price setting for specific quantities and guilds formed determining quality control standards and prices (Hart, 1927). Informing all colonial economic decisions were Medieval economic practices, English parliamentary laws and statutes, and biblical principles regarding usury (loans with high interest rates, for example), credit, and debt (Valeri, 2010; Winthrop, 1997). Factors causing them to reconsider free-market capitalism included external threats to the colonies amidst slow economic growth (stagnation) and simultaneously occurring price level increases (inflation) (Valeri, 2010). The external threats coupled with stagflation caused the Puritans to reexamine the relationship between risk and yield and the nature of risk and price (Valeri, 2010).

As the colonies reckoned with their approach to economics, Foster (1962) indicates £400 was set aside by the Massachusetts Bay Colony in 1636 for the inception of the first institution of higher education. Tuition was £5 per annum if paying in wheat or corn, while £4 was acceptable if paying with money (Foster, 1962). For the fledgling college to provide education to learners,

construction was needed, and exploitation of any non-English person was an accepted means of acquiring free labor (Beckert & Rockman, 2016; Gardner, 2018). Slavery was also used as punishment for Scottish prisoners of war by shipping them to the English colonies to sell as laborers for iron work and sawmills, or to enter indentured servitude (Gardner, 2018). Regarding Indigenous people, many were punished by displacing them to the West Indies in exchange for cotton, tobacco, and kidnapped African enslaved people (Labaree, 1979). The African slave trade began in earnest in 1637 with slave ships making regular voyages so that colonists had an adequate labor supply, thereby retaining and building wealth, to fulfill their vision of a city upon a hill (Beckert & Rockman, 2016). Their exploitations were rationalized through the use of biblical scripture, such as Leviticus 25:39-55, which gives a synopsis for the treatment of foreigners and their potential productivity (Rosenthal, 1973). Also, justifying chattel slavery for obtaining permanent unpaid labor was the Body of Liberties of 1641, which was a court order based on the Magna Carta (Warren, 2016). One phrase explicitly addressed lawful captives taken from just wars or strangers who willingly sell themselves or are sold by someone else (Warren, 2016). It would be more than six decades before the first anti-slavery pamphlet would be published bringing into light the immorality of an economic system based on the buying and selling of people to perform forced labor lacking any remuneration (Adams, 1921; Beckert & Rockman, 2016; Warren, 2016).

Political ideology. From 1630 to 1640, the population of the Massachusetts Bay Colony swelled from 1,000 to 20,000 (Wallenfeldt, 2020). Due to the onset of the English Civil War in 1642, the wave of immigration not only slowed, but some colonists even returned to England to fight for the Crown (Wallenfeldt, 2020).

In 1643, the Massachusetts Bay Colony informally partnered with the colonies of Connecticut River (New Haven and Saybrook), and Plymouth. According to the Articles of Confederation of the United Colonies of New England (1643), this confederation was represented by delegates of each colony to ensure a unified defense against Indigenous people, the French, and the Dutch by coordinating diplomatic and militaristic approaches. A secondary benefit to this coalition was to settle disputes arising from trade, boundaries, and religion. This alliance proved to be most necessary during King Philip's War of the 1670s (Labaree, 1979).

For those remaining in the colony, there was a realization that England's distraction with wars could be beneficial as close oversight was marginally waning (Morison, 1935). The Puritans' theocratic government, divinely guided and restricted to Puritan church members only, increased in power while the rights of those with dissenting beliefs decreased (Wallenfeldt, 2020). In effect, the Puritans were treating "others" in much the same way they themselves were treated in England.

As a joint stock company whose directors, officers, and shareholders were comprised of gentry and merchants, the charter to which the Puritans agreed gave governing authority to a corporate board headquartered in England with ultimate oversight administered by the Crown (Wallenfeldt, 2020; Winthrop, 1997). As such, the charter of the company itself would remain in England. Despite King Charles I giving this commercial enterprise many freedoms, such as the ability to trade, colonize, own land, and determine local governance, the Puritans sought more (Wallenfeldt, 2020; Winthrop, 1997). Consequently, Puritan leadership formed The Cambridge Agreement and agreed to merge the entire Massachusetts Bay Company into the Massachusetts Bay Colony for the purpose of becoming an English commonwealth in a multi-divisional form move (Moe, 2002). To that end, once the charter was signed, the document surreptitiously

crossed the Atlantic and remained hidden from public view and scrutiny so that the structure of the colony's managing body and rights of shareholders could not be verified (Jones, 1900).

Meanwhile, Puritan leaders such as John Winthrop, set about shrewdly structuring the governing body for the colony not fully based on the charter. For instance, in accordance with the charter, all shareholders formed the General Court (Moe, 2002). From this group, officers would be elected to make local laws (Moe, 2002). At the General Court's first meeting, only eight shareholders were present; and, together, all eight voted that they would become the first Council of Assistants (Hart, 1927). Their first order of business was to elect a governor and deputy governor from their small group – in direct contradiction to the terms of their charter (Hart, 1927). Regardless of the number of shareholders increasing the number of the General Court, the Council of Assistants continued to limit their number to the original eight and maintained a tight control on governance in the colony (Hart, 1927). They went as far as voting that all shareholders of the General Court must be church members, which was accomplished through a lengthy interview process where religious views and experiences were examined (Main, 2001). This ensured that only those with like-minded beliefs to the Council of Assistants would be given the right to vote as shareholders.

As the colony grew, two deputies represented each town. Suspicious as to the contents of the charter and knowing that it had remained hidden by the Council of Assistants, the deputies advocated to review the document (Hart, 1927). The Council of Assistants relented, and it was revealed therein that the General Court had the authority to make all laws; and, more importantly, all shareholders served on the General Court (Hart, 1927; Moe, 2002). John Winthrop, who was the colony's first governor, interjected into the debate that there were now too many shareholders to sit on the General Court (Hart, 1927). Hence, the deputies and the

Council of Assistants negotiated new terms that all of the deputies would act as shareholders' representatives and preside on the General Court (Hart, 1927). The term "shareholders" fell out of favor for the use of "freemen" instead, which was representative of all free, White, Puritan, land-owning men in the colony who were given the right to vote. Further, it was decided that the Council of Assistants and deputies would perform their functions independent of one another; however, for legislation to pass, both groups must find agreement (Hart, 1927). Finally, all judicial appeals would be decided by a joint session (Hart, 1927). A bicameral legislature was born and so, too, was the belief that the company's charter had the political heft of a colony's constitution (Wallenfeldt, 2020). This maneuvering left the impression that this company-turned-commonwealth had a mere dotted line matrix relationship to the corporate board in England, and now reported directly to the Crown.

Jockeying for political power was taking shape and slowly forming the bedrock of a new nation with new opportunities. Now that both the historical basis for intellectual property ownership and the sociocultural factors of those who founded the nation's early colleges that produced intellectual property are understood, a transition to the underpinning theories of intellectual property is necessary.

Theoretical Framework

Bringing philosophical assumptions together, providing a guiding approach to the research process, and informing this dissertation is a theoretical framework (Creswell & Poth, 2018). Without theory-based research, Gall, Gall, and Borg (2007) assert that studies will likely "contribute nothing to the slow accumulation of knowledge needed for the advancement of the science of education" (p. 45). The theoretical basis for this study is significant as it is used to explain or justify ownership of intellectual property. Principles from two predominant theories,

and their associated sub-categories, underpin this research. These include ethical theories based on Kant (1788), Bentham (1842), Mill (1863), Locke (1689), Hegel (1821), and Rawls (1971) and social theories devised by Bandura (1977) and Unger (1976).

Ethical theory. According to Klein (2011), Ethical Theory provides a theoretical justification for innovators to retain ownership control of their intellectual property due to inherent moral rights. Tomkowicz (2012) posits that an utilitarianistic theory, a sub-category of ethical theory, provides a viable basis for the protection of intellectual property ownership rights of a creation. Meanwhile, Breakey (2012) explores freedom through a rights-based prism to determine what kinds of limitations creators have. He focuses on happiness, or utility, as the measurement and motivation for moral and ethical behavior (Breakey, 2012). Lastly, Merges (2011) advances the Theory of Justice further.

Categorical imperative. Ethical Theory, as developed by Immanuel Kant (1788), is predicated upon a strong sense of duty which must outweigh any emotional propensity for not behaving ethically and morally. For Kant's (1788) Categorical Imperative, a central guiding question must be asked: Does one's action respect the goals of human beings rather than using them for one's own purposes? If this question is answered in the negative, then the action simply must not be pursued. Here, the consequence of the action is irrelevant. The entire matter rests on acts motivated by good will and duty fulfillment. Duty, in this context, is the responsibility to apply human reasoning to determine the rational and ethical conduct. Klein (2011) describes human reasoning as the "search for universal laws that are central to human morality, the heart of the demand for impartiality and justice" (p. 100). Morals are specifically defined utilizing an intensity scale that measures the degree that one applies his or her ethical principles (Klein, 2011). Acts are the behaviors through which one demonstrates morals and ethics (Klein, 2011).

Rules are defined as the boundaries within which one must operate (Klein, 2011). For higher education, these rules are intellectual property laws and associated university policies (Klein, 2011). Together, these comprise cultural values that reflect the traditions and principles of a community – in this case, within the community of an institution of higher learning (Klein, 2011). Cohen (2016), though, notes that if values drive ethical behavior within the confines of morality in education, Kant (1788) believes it must be done so entirely absent of feelings. Conversely, Jeremey Bentham (1842) believes feelings, especially the feeling of happiness, has a place in ethics.

Utilitarianism. Three significant, utilitarianistic theories within Ethical Theory provide a premise for protecting ownership rights of a creation. They are (a) Bentham's (1842) Principle of Utility, (b) Locke's (1689) Labor Theory of Property and (c) Hegel's (1821) Hegelianism. Utilitarianism is used to suggest property rights are absolutes toward achieving human happiness or satisfaction (Tomkowicz, 2012). According to Tomkowicz (2012), the legal system can offer this kind of satisfaction.

The principle of utility. Bentham (1842) adds the construct of happiness to Kant's (1788) constructs of morals, ethics, and rules in his alternate Ethical Theory entitled, The Principle of Utility. Unlike in Kant's (1788) Categorical Imperative, Bentham (1842) eliminates the idea of good will motivating specific acts. In its stead, how individuals ultimately act is what matters. This utilitarianistic view advances human nature's tendency to choose pleasure over pain as a root cause towards motivating ethical behavior (Bentham, 1842). According to Bentham (1842), humans engage in acts that induce happiness. Bentham (1842) finds value from the simple state of being happy; whereas Kant (1788) finds happiness valuable only when applied to moral acts that are chosen freely. These attitudes by both ethicists translate into opposing views of rights.

Kant (1788) asserts that rights are a demonstration of the value instilled in all individuals. Whereas Bentham (1842) believes that natural rights are nonsensical and legal rights are imaginary constructs that could only have value if they lead to one's happiness. James Mill (1863) also utilizes the construct of happiness. Mill's (1863) vision of a Utilitarian Theory within Ethical Theory is fixated on the principle of utility, or the principle of greatest happiness. This happiness principle serves as the standard bearer for morality and is the goal for an ethical life (Mill, 1863).

Labor theory of property. Bentham (1842) grounds his Ethical Theory in John Locke's (1689) empiricism – the theory that all knowledge emanates from an individual's sense experiences. Merges (2011) leans on empiricism to explain the natural rights of intellectual property through the lens of Locke's (1689) Labor Theory of Property. The premise behind these rights is that they are inherently present in all individuals (Locke, 1689). Because intellectual property requires an individual's intellectual or physical effort, the created product innately belongs to its creator (Merges, 2011). This labor justification recognizes the labor put toward the property's creation. Simply put, had the labor not been devoted, the property would not exist (Locke, 1689).

Hegelianism. Hegel's (1821) eponymous Hegelianism theory is demonstrated by a property's tangible existence in two ways. These are (a) property that is connected to only one person and cannot be replaced and (b) property that is merely instrumental and can be replaced without causing pain to the creator (Hegel, 1821). Tomkowicz (2012) uses these to focus on the philosophical justification of intellectual property rights. Constructs include natural rights, labor justification, creations, and philosophy of right (Tomkowicz, 2012). Natural rights are those embodying absolutes that have been granted to all by God (Tomkowicz, 2012). Labor

justification determines that the one who labors toward the intellectual property should be given property rights so that the creation is protected (Tomkowicz, 2012). Creations are any tangible or intangible entity that has been physically or intellectually developed (Tomkowicz, 2012). According to Hegel (1821), the philosophy of right is the right to property which is the first expression of freedom. The Hegel theory produces overlaps in Tomkowicz's (2012) work by demonstrating the tension resulting from the commercialization of intellectual property. The overlaps in Tomkowicz's (2012) work demonstrate the tension resulting from the commercialization of intellectual property. Intangible constraints, such as law, are placed on tangible creations that have potential intellectual or commercial value (Tomkowicz, 2012).

Theory of justice. Building on the work of Kant (1788) and opposing Mill's (1863) Utilitarianism and Locke's broader Theory of Natural Rights, John Rawls (1971) Theory of Justice demonstrates an updated Kantian-type theory that promotes fairness among society by guaranteeing equal rights so that one can achieve a fulfilling life. The Theory of Justice is centered on integrating the idea of freedom with that of equality in an attempt to apply a framework on a contemporary society (Rawls, 1971). Rawls (1971) theory advances two ways to maintain fairness within society. They are (a) to establish equal basic rights and freedoms for all and (b) to apply a principle of economic justice that includes equal opportunity and collective economic benefit for all groups (Rawls, 1971). Rawls' (1971) justice as fairness concept is developed further by Merges (2011). Merges (2011) leans on Rawls' (1971) theory and combines it with the theories of Kant (1788) and Locke (1689) to establish one unifying theory pertaining to intellectual property ownership. Merges' (2011) assertion balances limits on appropriation which is paramount to justly rewarding ownership rights for creative works.

Social theory. The second significant theoretical category represents social phenomena. Social Identity Theory and Science Theory provide paradigms to study and interpret intellectual property ownership behaviors.

Social identity theory. Social Identity Theory as put forth by Albert Bandura (1977) demonstrates social learning theory as individuals learning from one another through observation, imitation, and modeling behaviors. This modeling could represent positive or negative behaviors, attitudes, and emotional reactions (Bandura, 1977). Klein (2011) delineates social identity as the way in which individuals view themselves inform their perceptions of the world around them. Collectively, these perceptions engender behavior and form a conditioned environment (Bandura, 1991; Klein, 2011). Therefore, one's social identity could influence the perceived cultural or economic value of one's intellectual property, thereby driving its demand for ownership. Nadelson (2007) refers to Bandura's (1977) socially determined self-regulation as social projection. Social projection focuses on seeing people and places through the lens of experience, rather than through an objective point of view (Klein, 2011).

Social science theory. The legal theorist, Roberto Unger (1976) leans on Hegel's (1821) Hegelianism and the rule of law to form the basis of his Critical Social Theory. The rule of law equally subjects all societal members under publicly known constraints intended to guide individual and institutional behaviors (Black, 2016). Unger (1976) believes that because the problems outlined by previous social theorists remain unsolved, "social theory must destroy itself" for its ultimate intent to be fulfilled (p. 8). Unger (1976) explores a modern social paradox. Individuals enjoy the benefits of living in a society where their freedoms can be expressed but find the social structures in place to be oppressive, thereby ultimately suppressing their pursuit for freedom (Collins, 1987). This paradoxical insight can be applied to higher

education and the academic freedoms expected by stakeholders who are also intellectual property creators. To resolve issues such as this, Ligertwood (2018) asserts that legal thought needs to extend past jurisprudence and interact with "the existing and adjacent possible institutional and ideological structures of society" (p. 237).

Problem Statement

Because intellectual property reflects what a culture achieves, values, and advances, a system to award rightful ownership of it is critical. In the United States, a substantial amount of intellectual property is born within the walls of the university due to its propensity towards research and service. Understanding, from the outset, who owns this property is imperative in knowing who can access it, direct its influence, and profit from it. For American universities, intellectual property ownership disputes have long interacted with legislation and have often been resolved through litigation. The result, of which, is an ongoing tension between the idea of furthering public goods (that which can be attained from higher education for the benefit of the public) and private rights (those rights of the owner, whether as an individual or an entity, to restrict or release intellectual property) (Labaree, 1997; Rooksby, 2016).

The recent commercialization of knowledge within higher education can be summarily traced back to the decadence of the 1980s – a time when deregulation and policies supporting free-market capitalism converged and cleared the way for an increase in commercial activity across the board from public and private business sectors to publicly and privately funded universities (Rooksby, 2016). Therefore, because of neoliberal economics, interest increased in higher education among students, thereby increasing competition and spending among institutions (Rooksby, 2016). Simultaneously, court opinions and legislation further abated regulations surrounding intellectual property ownership, which increased the income-generating

potential of universities holding patents and copyrights (Rooksby, 2016). However, the assumption that university interests in intellectual property ownership did not begin until restrictions were eased in the 1980s falls short of the historical record. From historical evidence, it is apparent that intellectual property ownership rights had long been brewing beneath the surface as scientific discoveries and artistic achievements were emerging from institutions.

Currently, research has been limited to only facets of intellectual property and higher education. Several studies focus on a single "vertical axis" of intellectual property. Examples include research on its historical rise; its justification; its economic structure; or its place in property law (Brown, 1999; Bugbee, 1967; Cortada, 1998; Khong, 2006; Ladas, 1975; Landes & Posner, 2003; Merges, 2011; Patry, 1994; Steiner, 1905; White, 1967). Husovec (2016) even outlines a compelling historical account of intellectual property ownership rights pertaining specifically to The Netherlands while Secundo, Lombardi, and Dumay (2018) research the capitalization of intellectual property from an Australian perspective. Similarly, there are studies that focus on a single "horizontal axis" of higher education. Instances include research on its historical evolution; student or faculty plagiarism; or social, political, and economic challenges (Bastedo, Altbach, & Gumport, 2016; Bloch, 2012; Bracha, 2019; Gutek, 1995, 2011; Klein, 2011; Lucas, 2006; Nadelson, 2007).

The few studies that explore the intersecting axes of intellectual property and higher education are limited to the current modern monetization and management of intellectual property; intellectual property policies developed in higher education; or are intellectual property perceptions among students, faculty, human resources staff, and student affairs staff (Hentschke, 2017; Knight & Lugg, 2017; Rooksby, 2016; Saunders & Lozano, 2018). Therefore, the

problem that necessitates this study is that current research lacks a synthesized analysis based on historical evidence as to what attributed to the rise of university intellectual property commercialization.

Purpose Statement

The purpose of this historical study is to describe how university intellectual property ownership interests began and how these contributed to, and interacted with, case law and legislation ultimately giving rise to the commercialization of collegiate-driven knowledge at the colonial colleges of Harvard and Yale. At this stage in the research, the monetization of intellectual property in higher education will be generally defined as commercialization. Guiding this study are ethical theories based on Kant (1788), Bentham (1842), Mill (1863), Locke (1689), Hegel (1821), and Rawls (1971) and social theories devised by Bandura (1977) and Unger (1976) as they explain and justify the relationship between ownership and intellectual property.

Significance of the Study

The ensuing study is significant in three primary ways. First, empirically, this study begins to fill in a gap in the literature where one currently exists (Hentschke, 2017; Knight & Lugg, 2017; Rooksby, 2016; Saunders & Lozano, 2018). Adding a qualitative historical analysis to the literature that examines the historical record to determine how university intellectual property ownership interests began and how these contributed to, and interacted with, case law and legislation ultimately giving rise to the commercialization of collegiate-driven knowledge at the colonial colleges of Harvard and Yale. This contribution to the literature will likely yield deep, contextual knowledge of this phenomenon (Creswell & Poth, 2018).

Second, there are potential theoretical implications associated with this historical study. While Unger's (1976) Critical Social Theory provides the theoretical structure for this historical analysis by serving as the guiding theory, the works of Kant's (1788) and Bentham's (1842) Ethical Theory, as well as, Bandura's (1977) Social Identity Theory lay the theoretical foundation. These theories may acquire deeper understanding when applied to this historical study by giving the study additional theoretical significance.

Third, there is a practical significance of the historical study. Unlike some areas of higher education, intellectual property issues affect every stakeholder from federal and state government to the board of trustees, administration, faculty, staff, students, parents, alumni, and community members at every U.S. institution of higher education (Rodriguez, Greer, & Shipman, 2014; Rooksby, 2016). Not understanding how institutional intellectual property practices have evolved over time leaves stakeholders inadequately prepared to engage in projected perspective when anticipating intellectual property's growth and impact on the future of higher education. This vulnerability could result in substantial institutional and personal financial loss in the forms of revenue royalties and litigation expenses which can significantly burden annual budgets (Hentschke, 2017; Secundo et al., 2018). These disputes could also have a lasting influence on future court opinions, which will further weigh public good and private rights (Rooksby, 2016). Lastly, and perhaps most importantly, the public good may be irrevocably compromised as the intellectual property benefit is either gained or lost (Rooksby, 2016).

Research Questions

The following research questions guided this study. They are derived from the problem and purpose statements. Following the recommendation of Creswell and Poth (2018), the central

question is a reduction of the entire study, meaning that the research has been reduced to the central core of its idea. The guiding sub-questions surround Creswell and Creswell's (2018) "description of the case and the themes that emerge from studying it" (p. 134).

Central Research Question

The central research question that guided this historical study was: What produced intellectual property rights interests and how did these interact with, and contribute to, legislation and case law moving Harvard and Yale from former colonial colleges to modern commercialized enterprises? Central to this research is the historical record of the founding of Harvard and Yale, the adjudicated intellectual property disputes involving both institutions since their inception, and the relevant legislation providing a parameter in which each college must operate. In conjunction with these, increased interest in intellectual property ownership rights were examined through the historical account of sociocultural, political, religious, and legal elements (Berman, 1983; Buckley, 2017; Morison, 1935; Wallenfeldt, 2020).

This central research question focused on a comprehensive phenomenon. While other factors emerged that influenced this phenomenon, Creswell and Poth (2018) recommend beginning a study with a single focus and studying it deeply. The guiding sub-questions accomplished that by giving context to this central question.

Sub-question one. What motivated intellectual property ownership rights interests at Harvard and Yale? To understand the evolution of intellectual property ownership thought at two early American colleges, one must start at that beginning to follow the rise in interest of claiming ownership over individual or institutional creative works. Answering this question will also reveal at what point along the phenomenon's timeline the institutions realized the private benefits of control (Bracha, 2019). In this case, private benefits of control are those benefits

representing the potential of economic gain acquired from exerting influence over the owning and directing of property beyond the physical realm and into the intellectual (Foster, 1962; Rooksby, 2016).

Sub-question two. In what ways did these interests interact with legislation? Two timelines have mirroring evolutions due to their intrinsic interdependency upon one another. This question probed the growth and interplay of the evolutions of intellectual property ownership rights and legislation (Fisher, 1999). Legislation is a descriptive for the collection of statutory laws enacted by Congress in the form of Acts for the purpose of regulating, deregulating, authorizing, providing, restricting, granting, or sanctioning various items (Burnham, 2016). Regarding intellectual property ownership rights, legislation has served to limit the time and scope of rights (Rooksby, 2016).

Sub-question three. How did these interests contribute to case law? Law based on judicial decisions that have become common law either through binding precedent or persuasive authority was examined to understand in what ways the adjudicated intellectual property disputes of Harvard and Yale have affected case law as it pertains to (a) higher education or (b) corporations who partner with higher education institutions for specific intellectual property development (Friedman, 2019). Legal cases spanning the colonial period to modernity were used to better understand the phenomenon.

Sub-question four. To what extent did these interests incentivize Harvard and Yale? From a contemporary perspective, intellectual property ownership disputes have risen due to important, but basic, factors involving potential revenue stream and control (Rooksby, 2016). Davies (2015) concurs that universities are increasingly interested in owning knowledge that has

market value; however, involving academia in market-driven demands causes tension among university stakeholders. This question seeks to ascertain the monetization motivations on the institutions.

Sub-question five. How did these interests alter both colleges' original missions of educating clergy? At the inception of the nation's first college in 1636, Harvard's mission statement was a declaration to instill biblical principles into all students for the purpose of creating a solid foundation for their lives (Morison, 1935). However, only 74 years into living this mission, Harvard named their first secular president in a move to redirect the mission of the institution (Morison, 1935). As of 2020, Harvard's focus is on the academic and leadership preparation of citizenry for the benefit of society (The Mission of Harvard College, 2020). Yale's mission evolution is similar (Buckley, 2017). Therefore, to understand to what extent a correlation exists between intellectual property interests and mission redirections as motivations changed, the historical evidence was scrutinized to answer this question.

Methods

Viewing history as a metaphoric ongoing conversation between people who continuously enter and leave a parlor, Burke (1974) philosophized that the point one enters the discussion is temporal to the overall experience. Burke (1974) writes:

> You come late. When you arrive, others have long preceded you, and they are engaged in a heated discussion, a discussion too heated for them to pause and tell you exactly what it is about. In fact, the discussion had already begun long before any of them got there, so that no one present is qualified to retrace for you all the steps that had gone before. You listen for a while, until you decide that you have caught the tenor of the argument; then you put in your oar. (p. 110)

This historical study is the insertion of an oar into the waters of a larger and ongoing intellectual property conversation through the exploration of a central research question. However, joining the discussion through questioning is not sufficient. True participation is found in the quality of the contribution of the work produced. As Burke (1974) continues:

> Someone answers you; you answer her; another comes to your defense; another aligns herself against you, to either the embarrassment or gratification of your opponent, depending upon the quality of your ally's assistance. However, the discussion is interminable. The hour grows late, you must depart. And you do depart, with the discussion still vigorously in progress. (pp. 110-111)

Therefore, to have a legitimate impact on the historical conversation, one must rely on quality data sources to answer questions. Similar to Burke's (1974) framing history as an unending parlor discussion, Carr (1961) sees history as a never-ending dialogue between past and present. It is upon Carr's definition that Gall et al. (2007) define historical research as the "process of systematically searching for data to answer questions about a phenomenon from the past to gain a better understanding of the foundation of present institutions, practices, trends, beliefs, and issues in education" (p. 529). Likewise, Tuchman (2004) describes historical research methods as those involving "the use of primary historical data to answer a question" (p. 462).

Historical Method Research Design

Williams (2007) explains that the question posed forms the central research question of the historical research method and functions to explain the (a) intellectual origins of a particular idea, (b) causation of an event, (c) consequences of an event, (d) cultural context of an event, (e) accountability for an act, (f) social history of an event, and (g) broad trends in society during an

event. Depending upon the question, data may involve demographic records, newspaper articles, letters, diaries, architectural drawings, or government records (Tuchman, 2004). Beyond primary and secondary sources, Williams (2007) also includes documents, maps, artifacts, images, cliometrics, and genetic evidence as historical data. Paramount to the process of choosing which data to utilize is the consideration of (a) which data are appropriate to the question asked, (b) how each was originally collected, (c) what meanings were originally attached to the data at the time of collection, and (d) what meanings can be extrapolated from these data now (Tuchman, 2004). It is through this gathering of evidentiary support that one can construct a historical analysis (Williams, 2007).

Crucial to constructing and conducting a historical analysis in the social sciences is the use of a theoretical framework. Theory navigates the researcher toward answers to their questions (Tuchman, 2004). For a historical study, theory and context are interdependent. Context spurs the identification of theoretically pertinent data while theory determines the understanding of relevant contexts (Tuchman, 2004). The product, of which, is an interpretative framework of constructed reality for the benefit of historical education (Gall et al., 2007). These historical education benefits in higher education may include (a) a subject in the curriculum, (b) a foundation for developing new knowledge and policies, (c) an evaluation program, (d) a variable affecting validity of further research, or (e) a tool used for future planning (Gall et al., 2007).

Lastly, credited with the research design of historical methods is Thucydides (460-400 BCE) of Athens, Greece (Cochrane, 1929). Thucydides is known as the father of scientific history as he is thought to be the first to apply strict standards towards evidentiary support and

cause and effect analyses. His impartiality is noted because his Athenian counterparts gave their deities credit for life's interventions.

Approach

The nature of this analysis aligned with qualitative inquiry for two primary reasons. First, the study focused on the narrow and deep issue of what produced intellectual property rights interests and how these interacted with and contributed to legislation and case law moving Harvard and Yale from former colonial colleges to commercialized enterprises. Second, the data utilized was described textually, rather than numerically, with a focus on the historical record for contextual analysis (Creswell & Poth, 2018). Had the focus been broad and shallow, or leaned into an abundance of historical statistical data, a quantitative approach would have been employed (Creswell & Poth, 2018; Williams, 2007). Additionally, the study was inductive because it involved recognizing meaningful themes as they emerged within broad patterns (Creswell & Creswell, 2018). Working inductively requires the researcher to understand the context implicitly (Tuchman, 2004). Unlike most other qualitative studies and all quantitative studies, historical research studies are presented in the format of a story with a chronology of events, important settings, involved historical characters, and "the larger forces in society that influenced the actions and thoughts" of each, with the researcher's interpretations interwoven throughout (Gall, Gall, & Borg, 2010, p. 442).

Definitions

The following are the terms that were pertinent to this study.

1. *Adjudicate* – To adjudicate is to decide a dispute judicially (Burnham, 2016).
2. *Copyright* – The right to copy an original work, such as literature, music, sound recordings, drama, choreography, art, picture, graphic, photograph, sculpture,

architecture, video recordings, motion pictures, and other tangible mediums defines copyright (Black, 2016). Only the owner of the copyright may reproduce, perform, distribute, adapt, or display the copyrighted work (Black, 2016). For works created after January 1, 1978, copyright ownership lasts for the duration of the owner's life plus 70 years after the owner's death.

3. *Intellectual Property (IP)* – World Intellectual Property Organization (n.d.) defines intellectual property as creations of the mind. These products can refer to art, literary works, symbols, designs, images, and inventions that can be used for commercialization purposes (WIPO, n.d.). These properties can assume legal protections in the forms of copyrights, patents, trademarks, and trade secrets (Burnham, 2016). Protections, such as these, are designed to give ownership recognition and be a catalyst for financial award by creating an environment where further innovation can flourish (Rooksby, 2016). This helps to establish a balanced approach that considers the interests of both the commonweal and the innovator.
4. *Intellectual Property Rights (IPR)* – Collectively, intellectual property rights are those rights associated with legal protections for intellectual property. Copyright law originates as a Constitutional protection that authorizes Congress to enact statutes "designed to promote progress by protecting literary and artistic expression, such as computer programs, books, poetry, song, dance, dramatic works, movies, sculptures, and paintings" (Alexander & Alexander, 2017, p. 719). Qualified works are original and give the creator ownership rights throughout her life plus 70 additional years, or for 95 years following publication, or for 120 years after the work's creation - whichever comes first (Alexander & Alexander, 2017). Patents are protected by federal statute stemming from the U.S.

Constitution and provides exclusive rights to "stimulate discovery of new processes, machines, compositions of natural matter and new technologies" (Alexander & Alexander, 2017, p. 719). Trademarks are protected by federal statute through the Commerce Clause of the U.S. Constitution, The Lanhan Act, and protects words, symbols, and "other identifying features that indicate the source and nature of goods services" including logos, slogans, colors, and pictures (Alexander & Alexander, 2017; Rooksby, 2016). Trademarks have no expiration. Unlike copyrights, patents, and trademarks, trade secrets were not federally protected until recently. Prior to 2016, they were covered by state statutes designed to prevent the theft and appropriation of trade secrets (Alexander & Alexander, 2017).

5. *Litigate* – To litigate is to engage in a legal judicial process (Burnham, 2016).
6. *Patent* – A patent gives the owner the right to have authority over inventions that are novel, innovative, beneficial, and nonobvious (Black, 2016). The patent owner may exclude all others from using, making, selling, marketing, replicating, or importing the invention for 20 years after the patent filing date (Black, 2016).
7. *Patent Pools* – Patent pools are an agreement between two or more patent owners to license one or more patents with one another or with a third party (Delcamp, 2015). These pools typically stem from complex technology where there is a dependence on complementary patents so that an emerging technology can function properly (Delcamp, 2015).
8. *Trademark* – A trademark is a logo, symbol, word, or phrase to demonstrate the source of goods or services (Black, 2016). The purpose of the trademark is to distinguish the owner from other sellers or manufacturers (Black, 2016).

9. *Trade Secret* – A trade secret is a confidential formula, information, pattern, process, technique, or device that gives the owner an advantage over the competition (Black, 2016). The value in a trade secret lies with its perceived economic potential that due to it not being known by others. Reasonable efforts to maintain the secret is expected (Black, 2016).
10. *World Intellectual Property Organization (WIPO)* – This global organization is a self-funding agency of the United Nations consisting of 192 countries. Their mission is to contribute to the development of an international intellectual property system that fosters innovation thereby benefitting all (WIPO, n.d.).

Summary

In Chapter One, several sections are presented to introduce the reader to this study. First, a background of intellectual property ownership is established. These included the historical basis, the sociocultural context, and the theoretical framework of the study. These are followed by the problem that necessitates this purposeful and significant study. To recapitulate, because intellectual property reflects the innovative achievements, values, and advances of a society, and because it affects all higher education stakeholders, it must be protected and understood. Despite a wealth of literature on intellectual property, in general, few studies provide an in-depth analysis of how intellectual property interacts with higher education. Of these, none follows the evolution of intellectual property ownership at America's universities. Hence, the problem that necessitated this study is that current research lacks a synthesized analysis based on historical evidence as to what attributed to the rise of university intellectual property commercialization. This problem motivated the purpose of this historical study, which was to describe how university intellectual property ownership interests began and how these contributed to, and

interacted with, case law and legislation ultimately giving rise to the commercialization of collegiate-driven knowledge at the colonial colleges of Harvard and Yale. Not only does understanding the origins of intellectual property in higher education begin to fill a gap in the existing literature, but it also offers both theoretical and practical significance. These are outlined in the significance of the study, which is then followed by the central research question. Closing Chapter One are an explanation of historical research methods and the definitions of pertinent terms. In Chapter Two, the transfer of learning is examined, and the origin story begins.

CHAPTER TWO: EVOLUTION OF "MINE": 1630-1800

Overview

Chapter Two looks at the origin and necessitation of translatio studii, as it pertains to the founding of the universities of Harvard and Yale. Although 65-years separate the inception of each college in neighboring regions, they have a shared history regarding their Puritanical purpose and founding families (Morison, 1936). However, an important distinction should be made. Despite the colonists agreeing to the legal terms of the Massachusetts Bay Colony Charter of 1629, the Puritanical men seemed taken aback that England's long arm could reach across the Atlantic (Morison, 1935). Their former resentment of the authority towards their homeland grew to resistance in their new land when they committed their first rebellious act – the illegal founding of Harvard College (Baker, 2007). They justified the act by citing the laws of Moses over the laws of humans. Although England had greater issues at the time that drew its attention away from the behavior of the colonists, King Charles II would eventually rescind their charter in 1684 by writ of scire facias putting the welfare of 20,000 colonists in flux (Baker, 2007). By the time Yale was (legally) founded in 1701, Harvard was already changing and amassing power through control of information as it came into ownership of the New World's first two printing presses (The Harvard Crimson, 1928). Clearly, the seminaries' foundational histories are necessary for establishing the mindset and motivations of the founders as these would set a series of decisions in motion that would impact the schools. Hence, the universities' original missions, standards, and ideological views within the confines of English Common Law will be outlined as these provide an evolutionary framework on which to attach pertinent legal disputes during this

time. Lastly, the early definitions of patent and copyright will be explained before concluding this historical period using early intellectual property cases and statutes. The chapter will end with a summary.

The Origin and Necessitation of Translatio Studii

Gutek (1995) describes education as the "process that attempts to ensure the cultural continuation of a group, race, or nation" (p. 10). What constitutes the knowledge needed for cultural continuation has long evolved within higher education (Gutek, 2011). During the medieval era, this evolution of worthy knowledge to be shared generationally was influenced by religion (Gutek, 2011). Initially, it was the Catholic Church who kept a watchful eye over what knowledge was essential, and perhaps more importantly, which was acceptable. However, with the protests stemming from those seeking reformation of religious practices and beliefs, the emerging Protestant Church would begin to wrangle educational influences away from sacerdotal dictations (Gutek, 2011). These changes would ultimately make way for the emergence of the enlightenment era – impacting the evolution of education further. Despite shifts in worldviews, cultural values, and modes of inquiry, one constant remained – translatio studii.

The Medieval Era

Translatio studii, Latin for "the transfer of knowledge," can be traced to Daniel 2:39-40 in the Bible (Newsom & Breed, 2014). Here, the narrator acquaints the reader with the fulfillment of the first four kingdoms of Daniel's prophecy. The fifth kingdom, which has yet to come, will be under the rule of the returned Messiah. This scripture serves as a reminder that eternal values are to be the motivator of thoughts and actions (Collins, Flint, & Vanepps, 2002). Expressly, these values comprise the knowledge that deserves to be cherished, simply because it

is everlasting, rather than temporal (Collins et al., 2002). Spanning nearly 1,000 years during the medieval era and informing the knowledge base was the Catholic Church. This was primarily achieved through establishing Cathedral church schools, a theocentric worldview, and a hierarchal perception of society and church (Gutek, 1995). For an educational-impact perspective then, analysis of the medieval era can be approached from institutional, psychological, and behavioral standpoints (Gutek, 1995). As an institution, Gutek (1995) explains that although the Catholic Church's policies had "strong social, economic, and political implications," it was primarily a spiritual force that sought to "integrate medieval life, beliefs, and values" through the use of scripture, beliefs, developed doctrines, liturgy, and sacraments practiced (p. 74). These were foundational for educating priests and lay people alike (Gutek, 1995).

Central to accomplishing this was translating the Old Testament from Hebrew into Latin and the New Testament from Greek into Latin. This accommodation had a psychological effect, as well. It gave literate Europeans the opportunity to read the Bible first-hand through a common language - Latin. This had unintended psychological consequences: it personalized the experience and gave the reader a measure of independence from the church (Gutek, 1995). Behavioral changes would follow. With so many learning Latin in grammar schools, an opportunity emerged for peoples of different countries to come together.

Communication in Latin became commonplace which opened the gates to new trade and economic opportunities (Gutek, 1995). Eventually, this behavior spurred three educational agencies to develop. They were all governed by the church and focused on: (a) literary education, (b) chivalric training, and (c) vocational training (Gutek, 1995). On whichever path one was placed, translatio studii ensued.

Transferring this meaningful knowledge during the medieval era was the resolve of many key thinkers – hallmarking many of their philosophical ideas. Two of these educational contributors during this time were Thomas Aquinas and John Calvin (Gutek, 2011). Though three centuries separated each, the two shared an appreciation for the importance of ensuring Christianity was at the forefront of formal education. This was because both men saw humans as having value because they are created by God and have been created in His image. Ultimately though, each had their own biblical exegesis. This could be attributed to the part of the medieval era in which they lived. Thomas Aquinas (1225-1274) was an Italian Catholic priest in the hierarchical Dominican order who sought to harmonize the classical teachings of Aristotle with biblical scripture (Gutek, 2011). These developed into a form of theistic realism and formed the basis of his philosophy. Concentrated attention was placed on language so that the Church's body of knowledge was communicated explicitly. Of primary importance was the demonstration of learnt principles in liberal arts and sciences that could support the pursuit of higher education studies in philosophy, mathematics, logic, and theology (Gutek, 1995). The mission of Aquinas would be fulfilled through the eventual Catholic schools in America.

Conversely, John Calvin (1509-1564) was part of the Protestant Reformation movement that caused a decline in the influence of the Catholic Church. For the French reformer representing the renaissance period of the medieval era, the Bible was a "self-sufficient author in and of itself" (Gutek, 1995, p. 144). This radical approach to religion in the medieval era made literacy critical to salvation. As hierarchical structures began wavering and more former Catholics became interested in independence from the church, Calvin relied on literate laymen to be church trustees tasked with their congregation's collective conscience (Gutek, 2011). Calvin also advocated for the marriage of theology and economics through stewardship which increased

the probability of potential profit-making for the middle class (Gutek, 1995). Calvin's philosophy crossed the Atlantic and Calvinism became imbedded in the Puritanical ideals of the Massachusetts Bay colonists (Gutek, 1995).

The Enlightenment Era

In Colonial America, Puritans brought with them the concept of traditional coursework from the medieval universities of Oxford and Cambridge (Lucas, 2006). A priority among the colonists was for translatio studii to continue. In so doing, the values stemming from the medieval era would be propagated, preserved, and pushed into a new era. However, preservation would become a challenge as the new era also ushered in social reform, which favored reason over religion. Hence, eighteenth century educational philosophers toiled to create ways to transfer knowledge through pedagogical reforms based on their enlightened ideas and shifts in values.

By contrast though, the day-to-day educational experience of learners was still markedly medieval (Gutek, 1995). Vernacular (elementary) teachers held tight to rote memorization techniques and rigid discipline tactics (Gutek, 1995). Daily instruction consisted of basic reading, writing, arithmetic, and religious instruction. The maintaining of order and the conformity to doctrine were the two required teaching tenets of the time (Gutek, 2011). Meanwhile, grammar (secondary) schools remained committed to the medieval teaching of classical Latin, Greek, and theology as the epitome of the educated person (Gutek, 2011). Vocational training did expand to include law and medicine. Beyond this, higher education scholars regarded themselves as protectors of classical education (Lucas, 2006). Notwithstanding the many philosophies emerging from the eighteenth century, interest in implementing many of the philosophers' enlightenment-driven educational ideas would have to

wait until the nineteenth century before meaningful acceptance would be realized (Gutek, 1995). Demonstrating, once again, that translatio studii is culture's constant companion.

Seeking Veritas: The Founding of Harvard

After finally arriving on the shores of Salem on June 12, 1630, the colonists only lived there for a few weeks. Many of the colonists followed the land between the Charles River and the Atlantic Ocean southward for 16 miles and established Charles Town (modern day Charlestown) (Morison, 1935). However, because water was not plentiful, many in the group moved once more. This time, it was only 1.5 miles farther, establishing Boston as their new capital in 1632. With homes constructed, farms operational, and a meeting house built to serve as both church and municipality, the colonists turned their attention toward education (Adams, 1921; Morison, 1935).

By 1635, Boston Latin School was offering classes for male youths at the home of its first headmaster (Boston Latin School History, n.d.). In 1642, the first formal law was passed in the colony. It was concerned with education and required that all colonial children learn to read and write. Mather (1702) recognized translatio studii by describing education this way: "If ever there be any Considerable Blow given to the Devil's Kingdom, it must be, by Youth Excellently Educated" (p. 181). As the girls completed their education at the aforementioned Dame Schools and the boys graduated from Boston Latin School, it was time to consider higher education for male teens. However, there was one critical glitch. The Puritans had expressly agreed, in their charter, to not disobey English law, which included beginning any colleges without the consent of the Crown (Baker, 2007).

Massachusetts Bay Colony Charters of 1629 and 1691

The original colony charter of 1629 was for a joint stock company, where stock is bought by shareholders who can then claim a portion of company ownership (Barnes, 1923). Because this group was a business entity that also needed approval as an English colony from King Charles I, the charter represented both a government and a corporate organization (Massachusetts Bay Colony Charter, 1629). For the Massachusetts Bay Colony Charter (1629), not all shareholders chose to move to the new English colony. Some remained in England and held the stock as a pure investment opportunity.

Whether staying or going, within the charter, conditions were detailed and agreed upon by all shareholders (the "loving Subjects of Newe England" as written in Early Modern English in the charter) at the time of their stock purchase (Massachusetts Bay Colony Charter, 1629). Some conditions were simply alluded to, like the document of the charter remaining in England, while other conditions were completely omitted (when compared to other English charters). For example, unlike other corporate charters, England did not require this corporation (a) to be headquartered in England, (b) to have its officers live in specific places, and (c) to hold their meetings at specific places (Massachusetts Bay Colony Charter, 1629). This omission, whether incidental or intentional, proved critical in the shaping of the colony's perception of autonomy. Because the colony was headquartered in Boston and had its own representative government, a paradigm existed that lulled Puritans into believing they were more independent than they were (Barnes, 1923). Compounding this, was the feeling that the colony and the colonists were divinely ordained, which created a persistent tension between the colony and the Crown (Barnes, 1923; Mather, 1684).

It is with this worldview that Puritan leadership approached submitting to the conditions of the charter. Some of these terms were quite explicit, such as (a) the geographical location of the colony, (b) specific land use, (c) the sharing of resources mined (gold, silver, minerals), (d) the paying of customs on exported products, (e) election requirements, (f) aligning colonial laws with English laws, (g) using English currency, (h) trading only with England, and (i) adhering to all English laws (Massachusetts Bay Colony Charter, 1629).

Regarding the final three of these terms listed, the Puritans rebelled. The colony deliberately interfered with the royal prerogative of the Crown, meaning they did not recognize the collection of laws that gave jurisdiction to the monarch (Baker, 2007). As new laws were enacted in England, the colonists were expected to stay apprised of them since many were derived from the colonists' actions. Ignoring expectations, laws and the terms of their charter, the loving subjects began three significant illegal operations in the New World. First, they ran an illegal mint where English coins were melted down (king's head and all) to create new colony currency (Labaree, 1979; Massachusetts General Court, 1814).

Second, they traded with other countries despite (a) multiple warnings, b) the implementation of the Navigation Acts of 1651 and 1660, and c) being threatened with a quo warranto, which is a prerogative writ used to inquire into the authority one has to exercise a specific right or claim. The action can be used by the state to revoke a corporate charter (Barnes, 1923; Black, 2016; Massachusetts General Court, 1814).

Third, the Puritans rejected several English laws with which they did not agree. Two of which became evident in the first several years of life in the colony. They treated those believing in other faith systems (i.e., the Indigenous population, Catholic adherents, fellow Protestants such as the Quakers) in an inhumane manner because they were deemed committers of heresy -

despite English law forbidding religious intolerance (Massachusetts General Court, 1814). Even the head of the Anglican church, King Charles I, was viewed in this light. His being married to a Catholic only aggravated Puritan mistrust (Pestana, 1983). In a similar reaction to a second English law, which regulated the establishment of institutions of higher learning, the Puritans disobeyed once again (Baker, 2007). The result, of which, was the New World's first college – Harvard, established in 1636 (Baker, 2007). In England, colleges were simply buildings of instruction (Kelley, 1974). Only two universities, Oxford and Cambridge, were legal degree-granting institutions (Kelley, 1974). Harvard conferred its first (illegal) degrees in 1642 further complicating an already precarious situation (Kelley, 1974).

Therefore, these three rebellious acts of forming an illegal mint, commencing trade with other countries, and disobeying English law eventually caused the Massachusetts Bay Colony Charter to be rescinded in 1684 (Morison, 2010). In the years between 1636 – 1684, King Charles I was distracted with the English Civil War and the fighting of the armies of the English and Scottish parliaments (Fraser, 1979; Kenyon, 1978). At the center of the upheaval was Charles I's defense of an absolute monarch's divine rule. The war ended with Charles I found guilty of high treason and decapitated in 1649 (Kenyon, 1978). In the years that followed, the Commonwealth of England became a republic (Kenyon, 1978).

In 1660, a constitutional monarchy was instituted with the son of Charles I, King Charles II. Over the next two decades, Charles II was preoccupied with the bubonic plague health pandemic, the great fire of London, foiling a murder plot on his life, foreign policy agreements, parliamentary conflicts, and the disappointment of not producing a legitimate heir (Fraser, 1979). Therefore, the charter was not revoked until 1684, leaving more time for the Puritans' feelings towards independence to become embedded in their culture (Baker, 2007). During the two years

following the rescindment, the Puritans, whose numbers had swelled to 20,000, were left vulnerable (Wallenfeldt, 2020).

By 1686, the younger, Catholic brother of Charles II, King James II inherited the throne (Fraser, 1979). To answer the problem of the colonists in Massachusetts, King James II simply combined the colonies and provinces of Massachusetts, Plymouth, Connecticut, New Hampshire, Maine, Rhode Island, Providence, New Jersey, and New York, giving them the name of Dominion of New England and placing Dominion officers in their midst (Barnes, 1923). The new grouping only lasted three years. Once the colonists heard of England's Glorious Revolution of 1688-1689, which overthrew King James II, the colonists overthrew the Dominion's officials placed in the colony (Barnes, 1923). Once the Catholic, James II, had been replaced with his Protestant daughter, Mary II, and her Dutch husband, William III, a new charter was penned in 1691 (Barnes, 1923). The Massachusetts Bay Colony was now a royal colony, rather than a charter colony (Labaree, 1979). The Plymouth Colony and the Province of Maine were absorbed into the colony; and, together, the three areas were now called The Province of Massachusetts Bay (Labaree, 1979). The seeds of total ownership over colonial life, religion, livelihood, and education had now taken root and were germinating.

Mission

In 1636 and with a motto claiming to seek veritas, Latin for "truth" adopted in 1643, the clandestine college began in earnest towards translatio studii (Lucas, 2006; Morison, 1935). The desire for an institution of higher learning was relayed in the first pamphlet distributed in England that mentioned Harvard, *New England's First Fruits* (1643):

> After God has carried us safe to New England, and wee had builded our houses, provided necessaries for our lively-hood, and settled the Civill Government: One of the next things

> we longed for, and looked after was to advance Learning and perpetuate it to Posterity; dreading to leave an illiterate Ministery to the Churches, when our present Ministers shall lie in the Dust. And as wee were thinking and consulting how to effect this great Work; it pleased God to stir up the heart of one Mr. Harvard (a godly Gentleman and a Lover of Learning, there living amongst us) to give the one halfe of his estate. (p. 22)

It is with this mindset that the seminary of Newtowne College was formed in the new town of Cambridge in 1636. According to the Records of the Governor and Company of the Massachusetts Bay in New England, Volume I (1853), the first document to mention Harvard in the colony was in the form of a financial record with "£400 towards a schoale or colledge" (p. 183). Foster (1962) finds significance in this as Harvard has a history of being viewed as both an educational and financial institution. Three years later, a major contribution was made. In 1639, John Harvard, an alumnus of Cambridge, bequeathed his library of 400 books and £779 to the new college (Morison, 1935). In gratitude, the administration of Newtowne College formally changed the seminary's name to Harvard College and devised a clearly messianic mission as evident in *Harvard's Rules and Precepts*:

> Let every student be plainly instructed and earnestly pressed to consider well the maine end of his life and studies is to know God and Jesus Christ, which is eternal life, and therefore to lay Christ in the bottom as the only foundation of all sound knowledge and learning and seeing the Lord only giveth wisdom, let everyone seriously set himself to prayer in secret to seek it of him. (DeMar, 1995, pp. 102-103)

For Harvard, the centering sentiment of truth was especially significant. It was thought of as a divine truth. Eventually, the motto of Veritas was replaced in 1650 for In Christi Gloriam, Latin for the Glory of Christ (Ireland, 2015). The change occurred in the same year

that the Harvard Corporation was established (Morison, 1935). This motto carried the college through two centuries until the original motto of Veritas was rediscovered in 1836 while looking through early college documents in preparation for the 200th anniversary of the school; and, by 1843, the motto had been extended to Veritas: Christo et Ecclesiae, Latin for Truth: For Christ in the Church (Ireland, 2015). In time, Christo et Ecclesiae would be dropped from the seal, leaving only Veritas on a medieval shield displaying three books (a common design for colleges at the time, i.e. Oxford, Cambridge, and the Sorbonne (Ireland, 2015). For Harvard, the two open books represented the old and new testaments, whereas the closed third book symbolized the truth of the fulfillment of Christ's second coming (Ireland, 2015).

Standards

For admission, a demonstration of fluency in both Greek and Latin was required. Once admitted, the matriculated candidate (who was usually in his early teens) could expect a curriculum consisting of medieval learning, biblical studies, and Renaissance-based arts and literature. Combined, these culminated into a graduate who exemplifies the ideal gentleman, the model clergyman, and respected scholar (Lucas, 2006). In the colony, ministers were not only expected to minister to congregants and community, but they were also tasked with civic leadership responsibilities (Foster, 1962).

Part of becoming a university-educated civic leader was to be an upholder of specific standards, all of which were based on Puritanical interpretations of biblical truths. Even though Harvard students were mere boys, these precepts extended beyond conduct and expectations to areas such as appearance. For the Puritans, these standards even extended to their hair. In *New England's First Fruits* (1643), which helped shaped the standards of Harvard, the presence of a long head of hair and the absence of facial hair were equally shameful and viewed as an

abomination, as interpreted from I Corinthians 11:14, 16 and Deuteronomy 22:5. Harvard College Laws (1655) gives specific examples of similar rules and precepts, such as hair should not be (a) long, (b) shaped into locks by crisping or curling, (c) worn with foretops (bangs), (d) parted, and/or (e) powdered. Additionally, students were not to leave their rooms without their coats, gowns, or cloaks. Fancy or fashionable attire was strictly forbidden, as was the wearing of jewelry (Education in Massachusetts Bay, 2020). Adhering to these standards showed respect for the engagement of learning, the customs of Puritan society, God's authority, and the Puritanical pursuit of truth. It follows, then, that manuscript copies of these rules and precepts were handed down within one's family from the first Harvard student to the most recent – much in the tradition of translatio studii (Harvard College Laws, 1655).

Ideology

As discussed, the seeds of total ownership over all aspects of colonial life had rooted and germinated. From these sprouted seedlings, it became apparent that they were planted in tainted soil. The Puritans' set of beliefs was based on intertwining economic, educational, political, and religious philosophies. By the 1690s, this aggregate ideology was both pervasive and invasive and ushered in a dark period of colonial life (Rosenthal, 2009). Harvard came into ownership of the New World's first two printing presses (The Harvard Crimson, 1928). These early machines enabled Harvard leadership and alumni to amass power through the control of information.

Using Harvard's printing presses, the Puritans' ideological beliefs could easily be printed and propagated for propaganda purposes. Some propagandic examples include those by father and son Increase and Cotton Mather (C. Mather, 1693; I. Mather, 1693). The manipulation metastasized and culminated into an insufferable hysteria as oppressed individuals and vengeful villagers accused their more vulnerable counterparts and wealthier townspeople of practicing

witchcraft (Boynton, 2014; Rosenthal, 2009). This led to the accusation of more than 200 colonists with 20 of those being tried, convicted, and executed (Rosenthal, 2009). Some of the accused fled the Salem and Boston areas while others managed to maneuver through colonial law to avoid a sentence to the gallows by the Harvard-tied court (Rosenthal, 2009). Broadly, this period left a defining stain on the colony's history; and narrowly, Harvard's involvement in the two-year incident left an indelible mark on (a) its moral authority, (b) its manifestation of divine truth, and (c) the impact of the intellectual property it chose to publish.

In the years that followed, some are rumored to have privately expressed regret over their involvement in the legal proceedings of those persecuted. However, only one judge, Chief Justice Samuel Sewall (1700), publicly repented for his role while also openly reflecting on the colony's practice of slavery (Warren, 2016). In the years that followed, the calls for justice would grow louder. Meanwhile, to the south, the stirrings of the New World's second college began.

Seeking Veritas by Shining Lux: The Founding of Yale

The Massachusetts Bay Puritans were not alone. On the eastern seaboard of the New World, other colonies were under development. Two struggling Puritan-led ones, the Saybrook Colony of 1635 and the New Haven Colony of 1638, involuntarily merged with the more successful Connecticut River Colony of 1639 in the years of 1644 and 1662, respectively (Fisher, n.d.). This colonial conglomerate received a new royal charter from England to then operate as the Connecticut Colony (Kelley, 1974). By the mid-1600s, the Connecticut Colony Puritans affirmed the importance of translatio studii and endeavored towards a colonial college of their own (Kelley, 1974).

With the help of Harvard alumni and Massachusetts Bay Colony leaders, the Collegiate School was established near Saybrook in 1701 (Kelley, 1974; Middlekauff, 1999). Its mission was akin to its northern neighbor, but with one key distinction: they purposed to make this college legal (Kelley, 1974). The Collegiate School, renamed Yale College in 1718, would embody the lessons learned from Harvard's growing pains while confronting a new set of challenges.

The Chartering of Yale College

Led by Reverend John Davenport, one of the proud founders of New Haven Colony and an overseer of the establishment of Harvard, Yale's inception and materialization proved to be a relay spanning decades. Advocates for the college found themselves at the constant crossroads of lucre and law. When Edward Hopkins, a friend of Davenport's, bequeathed an endowment for the establishment of a New Haven Colony college, Davenport was hopeful (Kelley, 1974). However, due to ambiguous wording in Hopkins' will, the substantial gift was used instead to subsidize grammar schools organized in Hopkins' name with the remaining funds given to the already-established Harvard (Kelley, 1974). With Hopkins' estate now settled and the Connecticut area colonies converged, the defeated Davenport left New Haven for Boston. It would be 30 years after his death before his vision of a Connecticut college was realized (Kelley, 1974; Schiff, 2020).

The baton for this relay was then passed to Reverend James Pierpont and a group of young ministers who also believed that Connecticut needed its own seminary to educate young men for ministerial posts (Schiff, 2020). However, not overstepping their new colony's charter by incorporating a college was a challenge, as was finding sufficient funding (Kelley, 1974). Finally, with the support of leaders from both the Massachusetts and Connecticut colonies, along

with the financial contributions of local colonists, “An Act for Liberty to Erect a Collegiate School” was approved by the General Assembly (Fisher, n.d.). A key leader in this legal effort turned out to be Massachusetts Chief Justice Samuel Sewell, the only repentant judge from the Salem Witch Trials (Kelley, 1974). With the right to establish a legal, degree-granting college in hand, the college was finally realized in 1701 (Kelley, 1974).

Once established, each founder donated a stack of books to effectuate the college’s library (Kelley, 1974). However, for the founders-turned-trustees, the early days remained complicated. Overcoming the challenges confronting the college’s first 16 years were described as:

> The affair of our School hath been in a Condition of Pregnancy. Painful with a witness have been the Throwes thereof in this General Assembly. But we just now hear that after the Violent Pangs threatening the Very life of the Babe, Divine Providence as a kind Obstetrix hath mercifully brought the Babe into the World, and behold a Man-child is born, whereat We all Rejoyce. (Dexter, 1916, pp. 146-148)

The site near Saybrook was inconvenient for prospective/ current students, families, and faculty alike (Schiff, 2020). Interested communities within the colony began bidding to be the new location of the Collegiate School beginning a tumultuous process (Schiff, 2020). Ultimately, New Haven outbid them all in land offering and financial support (Schiff, 2020).

In 1716, the Collegiate School had a new home. Two years later, it had a new name. The elderly slave-trader, Elihu Yale, whose step-grandfather helped found the original New Haven Colony, had long been courted by Cotton Mather, a Harvard alumnus and Boston pastor who was heavily involved in the Salem Witch Trials (Kelley, 1974; Yannielli, 2014). Mather felt spurned by Harvard due to their denying him the presidency – a goal of his since his father,

Increase Mather served as Harvard president (Kelley, 1974). To spite Harvard, Mather endeavored to help the Collegiate School out of its precarious position (Kelley, 1974). His efforts availed 400 books donated by Elihu Yale to further grow the college's library (Schiff, 2020). Additionally, Mather encouraged Yale to donate a King George I portrait to hang in the college, as well as chintz cloth goods valued at £562 (Schiff, 2020). The cloth goods alone have a value of $137,475.91 today (Nye, 2021). In a demonstration of gratitude for this generosity, the trustees first named a building after Yale and then the entire college (Kelley, 1974).

Mission

With the college now entering a new phase of stability, instruction fulfilling translatio studii was solidly underway. The mission of Yale was to be a place where "Youth may be instructed in the Arts and Sciences who through the blessing of Almighty God may be fitted for Publick employment both in Church and Civil State" (Kelley, 1974, p. 7). The overarching purpose of a Yale education was so "Every student shall consider ye main end of his study, to wit to know God in Jesus Christ and answerably to lead a Godly sober life" (Dexter, 1885a, p. 347). Like Harvard, the focus was squarely on God and His divine providence for the people of the colony; therefore, Yale College also sought veritas (truth), but did so by shining lux (light) so that this truth can be perfectly revealed (Oren, 1979). With the trustees voting on Lux et Veritas as Yale College's motto, the words were inscribed on the college seal in 1736 in both Latin and Hebrew (Oren, 1979). In Hebrew, the motto reads Urim v' Thummim, with a literal translation of lights and perfections and an allegorical translation of revelation and truth as written in the Vulgate, the 4th century Latin Bible (Oren, 1979). According to Oren (1979), Jews view Urim and Thummim as a representation of God's will. For Yale trustees, God's will may be understood through knowing Him and obeying His Word.

For ministers-in-training, Yale's mission was not simply a lofty goal held for students. It was an essential component for developing the discipline, character, and temperament that would be needed to undertake the Puritanical pastoral duties that awaited them (Kelley, 1974). In fact, early Yale College Regulations stated, "All Scholars Shall Live Religious, Godly and Blameless Lives according to the Rules of God's Word, diligently Reading the holy Scriptures, the Fountain of Light and Truth; and constantly attend upon all the Duties of Religion both in Publick and Secret" (Dexter, 1885b, p. 3). These words set the standards of the college.

Standards

The placing of Urim and Thummim upon the Hebrew Bible on the Yale seal signaled that the college was founded upon the Christian Old Testament, which serves as a foundation for the New Testament whose central themes surround the birth, death, and ascension of Jesus Christ and the formation of the Christian church (Oren, 1979). Hence, abiding by these biblical standards was synonymous with abiding by Yale standards. As such, transcribing all college standards onto paper for regular review was part of student admission (Dexter, 1885b). For these early seminarians, expectations included expert-level proficiency in Hebrew, Greek, and Latin (Dexter, 1885b). Hebrew was critical for Old Testament understanding while Greek was essential for New Testament study and interpretation of Greek-based Classics (Kelly, 1974). Similarly, Latin was necessary for Latin-based Classics and it was the language of scholarship (Dexter, 1885b; Kelley, 1974). The use of English was strictly forbidden within the college, except in one's bed chamber when conversing privately with another student (Dexter, 1885b). Also, in the bed chamber, candles were to be extinguished between the hours of 11pm – 4am (Dexter, 1885b).

Missing morning prayer, neglecting Sabbath worship, and partaking in alcohol (except for warranted medicinal purposes) were considered crimes and punishable by monetary penalties (Dexter, 1885b). Visits to taverns, inns, and victualling houses (restaurants) were forbidden; and, absences for hunting, fowling, and voting needed permission first (Dexter, 1885b). Seeking permission to participate in any of the above activities could be obtained from parents, a guardian, or rector (college president) (Dexter, 1885b). These regulations outlined the ways in which translatio studii was to occur. Adhering to these regulations taught discipline and prepared graduates to perform their ministerial posts and become integrated with their colony's ideology.

Ideology

By the time Yale College was relocated to New Haven in 1718, many of the Puritan colonists from Massachusetts Bay Colony and the Connecticut Colony had intermarried (Fisher, n.d.). With a shared faith and common Congregational churches throughout the area, mutual English colonial experiences in the same coastal region, and a future that had become increasingly entwined, the two colonies were socially connected and had mirroring Puritan-driven ideologies. Yet still, there were two divergences as indicated by the way they approached governance and English law. The Connecticut colonists patiently followed a legal process to establish their colony's college; and, while they were the first colony to accuse one another of witchcraft, their Connecticut courts tried and convicted far fewer than Massachusetts - even during the zenith of the witchcraft hysteria (Boynton, 2014; Rosenthal, 2009; Taylor, 1908).

Aside from these two anomalies, both colonies had similar economic systems built on traded lumber and goods (slaves included) between the tetrad points of England, Europe, the colonies, and the Caribbean (Labaree, 1979). They sustained themselves by way of farming and

became accustomed to precarious interactions with the Indigenous population (Labaree, 1979). With their ideological systems in place, the autonomous Puritans became increasingly independent and protective of their New England lives (Barnes, 1923). Further, with the colonial experiment of a Puritan majority and no minority group in a position to challenge the colonists' ideologies and ethical perspectives, the colonists' worldview only became further ingrained into their identity and the rise of ownership was well underway (Burnham, 2016; Middlekauff, 2005). The predominant attitude of ownership was one of "this is rightfully mine" and it stirred the makings of a new nation (Burnham, 2016; Middlekauff, 2005). Moreover, many colonists felt emboldened by the politically liberating philosophies of John Locke (1689) in the areas of natural rights, labor theory of property, and ethical theory. These would later inspire early American patriots and framers such as Thomas Jefferson (Middlekauff, 2005). By the time the American Revolution began in earnest in 1775, student militias from the colleges helped defend their communities; and, with trade routes interrupted, the availability of goods decreased while entrepreneurship increased (Daniels, 1980; Schiff, 2020).

English Common Law in the Colonies

"The structure of a society shapes the way people handle their disputes" (Mann, 1987, p. 41). For the English colonists, this societal structure was influenced by Mosaic Law while their legal structure had footings in medieval England. At the direction of King Henry II, what had been a legal system based on varying local laws was unified into a common system that applied judicial precedent to laws of crime, family/inheritance, and property (Baker, 2007). This system utilized Curia Regis, the King's Court, to regularly send judges to specific regions to hear disputes and used local juries (Baker, 2007). The disputes were then resolved ad hoc, recorded, and filed. These cases served as the beginnings of stare decisis, or binding precedent, for

comparable cases (Baker, 2007; Black, 2016). Judicial precedent, or case law, obligated the courts to approach cases with similar points in the same manner during litigation (Black, 2016). Reimagining legal procedure (a) established written records in the form of writs or royal orders, (b) obligated juries to consider law and fact, and (c) developed the hierarchical court system (Baker, 2007).

Nearly 500 years later, English Common Law proved enduring as it crossed the Atlantic with the colonists. Once here, Stoebuck (1968) explores, in three theories, how well English Common Law was assimilated in the colonies. The first is that the colonists continued Common Law adherence immediately upon landing, but only adopted those laws that applied to their new circumstances (Stoebeck, 1968). The second theory consists of colonists being more focused on Mosaic Law rather than Common Law. Common Law then took the shape of a gradual acceptance and together with Mosaic Law, the union would eventually yield the American Common Law legal system (Stoebeck, 1968). The final theory involves Common Law as it pertained to the Pilgrims rather than the Puritans. It argues that since the Pilgrims were largely illiterate, they would have not been versed in the particulars of law (Stoebeck, 1968). While this theory could be accepted as accurate, it does not pertain to this analysis since the colonies of Massachusetts Bay and Connecticut were settled by educated Puritans rather than uneducated Pilgrims.

Of the two relevant theories, the first was pervasive through the nineteenth century until the second theory gained interest (Stoebeck, 1968). Neither theory, however, acknowledges the expectation by the Crown that their citizens would continue to adhere to English Common Law nor does either theory recognize the English Puritans repeated written commitment to abide by their nation's law as evidenced by their many agreed-upon charters. From the colonization

years, though, what is seen is more of a combination of the two theories as illustrated by two events: the illegal founding of Harvard and the Salem Witch Trials. Plus, they valued (their version of) Mosaic Law as demonstrated by the way they litigated the many witch trials. From these, the Puritans seemed to adopt key laws that were convenient to their situation while ignoring the ones that were not. Plus, they valued (their version of) Mosaic Law as demonstrated by the way they litigated the many witch trials. Together, these two theories could represent the reception of English Common Law in the colonies and how this common law footing provided the foundation of American Common Law that emerged during the Revolution.

As the colonies matured and colonial Common Law developed, the body of rules evolved past the will of lawmakers, their statutes, and their decisions to become a more contextual enterprise based on equity (Berman, 1983). Equity here refers to reason and conscience of community, which supports Burnham's (2016) assertion that a society is reflected by the way in which it structures its government. For the colonists, who strongly self-identified with their respective colonies, this government structure mirrored overall opportunistic values of self-directed financial management and self-directed governing (Berman, 1983; Burnham, 2016). Therefore, by the late 1700s, the concept of self-determination to guide their daily lives and shape their destiny was supremely valued.

Conflicting with this concept was the oppression felt from England's authority over the colonies (Burnham, 2016). The colonists understood that control meant power and after being taxed without Parliamentary representation, the colonists' grievances were mounting and their power diminishing (Burnham, 2016). Parliament had enacted a series of laws including (a) the Tea Act designed to support the British East India Company and discourage the purchase of illegally obtained tea, (b) The Stamp Act to recoup monies spent on colonial protection during

The French and Indian War, and (c) the Coercive Acts which closed Boston Harbor as a penalty until restitution was paid on all the tea lost during the Boston Tea Party (Burnham, 2016; McCullough, 2005). Additionally, the Coercive Acts transferred colonial rule to a British military governor who forbade all town meetings without his approval. These measures only escalated tensions and colonists realized that revolting from British rule was the only way to wield complete control over their lives and to take back what they believed to be theirs - cementing the idea of "mine" into the American foundation. The verbiage scribed into Massachusetts law on March 17, 1783, as the siege of Boston came to an end, illustrates this:

> Whereas the improvement of knowledge, the progress of civilization, the public weal of the community, and the advancement of human happiness, greatly depend on the efforts of learned and ingenious persons in the various arts and sciences: As the principal encouragement such persons can have to make great and beneficial exertions of this nature must depend on the legal security of the fruits of their study and industry to themselves; and, as such security is one of the natural rights of all men, there being no property more peculiarly a man's own than that which is produced by the labour of his mind, therefore to encourage learned and ingenious persons to write useful books for the benefit of mankind, Be it enacted. (p. 99)

Once independence was declared and secured, the framers of the Constitution of 1789 established the formal governmental structure which directly influenced the emergence of a revised Common Law legal system in the United States (Burnham, 2016). Two key Constitutional components, in particular, formed the basis of this new legal system – the separation of powers and federalism (Burnham, 2016). Separation of powers protects citizens from potential tyranny by providing governmental checks and balances through the division of

government into three separate branches: legislative, executive, and judicial (Black, 2016). In so doing, each branch has specific duties and may not encroach on the others (Black, 2016). Separation of powers has a major effect on federal courts (Burnham, 2016). Whereas the Constitutional characteristic of federalism describes the two levels of government that are present in the United States: federal and state (essentially creating, from a modern perspective, 51 separate legal systems, one for each state and one for the federal government) (Black, 2016; Burnham, 2016).

English Common Law Intellectual Property Cases

There are three early cases of English common law interacting with intellectual property matters (Bracha, 2019). Two of these resolved monopoly disputes and a third case involved fair use against a copyright claim.

The Merchant Tailor's Case

Davenant v. Hurdis (1599) was the first recorded case regarding monopolies. This case involved the trade guilds that were prevalent in the late sixteenth century and the by-laws to which their members were subjected (Baker, 2007; Wagner, 1937). When one such by-law required guild members to send fabric to be finished by other trade members thereby spreading the work to more people, many members resisted and protested by rioting in the streets of London (Baker, 2007; Wagner, 1937). Davenant was a trade member who refused to fully abide by the policy and was subsequently fined (Baker, 2007; Wagner, 1937). He litigated the matter and argued that the by-law was illegal according to Common Law because it established a corporate monopoly and thus the by-law was void (Bracha, 2019; Wagner, 1937). The Court decided in his favor. In a culture where courts tended to stymie economic opportunities, this legal case marks a turning point in economic enterprise (Wagner, 1937).

The Case of Monopolies

In Darcy v. Allen (1599), the contemporary common law on monopolies was created (Bracha, 2019). This legal case went beyond the Davenant v. Hurdis decision that a corporate by-law would be invalid if it created a monopoly. It established the principle that a royal grant by patent would also be invalid if it created a monopoly, as well (Baker, 2007; Letwin, 1954). The issue arose from Queen Elizabeth I granting her beau, Darcy, a patent to manufacture and distribute playing cards (Baker, 2007; Letwin, 1954). Meanwhile, Allen, a haberdasher (dealer in men's clothing and goods), created and sold some playing cards in his London shop (Baker, 2007; Letwin, 1954). In response, Darcy filed an action of infringement; however, the Court found that Queen Elizabeth I's patent was invalid (Baker, 2007; Letwin, 1954). At a time when opinions were not always written down, the reasoning of this important decision was documented by Sir Edward Coke, the foremost jurist and politician of the Elizabethan and Jacobean eras (Baker, 2007). Later, Coke's "Institutes" and "Reports," which encapsulated legal learning and English Common Law from his time, would go on to have an enormous impact on American law (Baker, 2007; Donahue, n.d.).

The Case of Fair Use Doctrine

Gyles v. Wilcox, Barrow, and Nutt (1740) established legal precedent in copyright law that is still seen today. This case involved the bookseller, Gyles, who purchased a book's publishing rights and then published it (Patterson, 1968). Not long after, publishers Wilcox and Nutt hired Barrow as a writer to abridge Gyles' book and publish it under a different, but similar, title (Patterson, 1968). As a result, Gyles sued all three in an effort to stay the publication under the Copyright Act of 1710/ Statute of Anne for copyright infringement (Patterson, 1968). Unfortunately for Gyles, the Court created a distinction between true abridgments and colored

shortenings and believed the book abridged and published by Wilcox, Barrow, and Nutt to be the latter. The judge reasoned that an intentional attempt to create a new work from the original was not made; therefore, there was no infringement upon Gyles' copyright (Patterson, 1968). Instead, the abridged work was just a colored shortening of the book created in an attempt to bypass the law (Patterson, 1968). The decision established the fair abridgement doctrine, which then led to the fair use doctrine.

Law and Intellectual Property Legislation

By 1624, legal opinions surrounding monopoly validity laws were still opaque enough that Parliament deemed a clarifying provision was needed. In the Statute of Monopolies (1624), they outlined that the validity of all monopolies must be examined, heard, tried, and determined according to English Common Law. Three additional intellectual property laws would round out the eighteenth century. The first affected colonial Common Law while the last two were enacted after the American Revolution.

Copyright Act of 1710/ Statute of Anne

The Copyright Act of 1710/ Statute of Anne recognized the need for government and court control over copyright ownership decisions. Up until this point, control was conducted by private parties among themselves, often leaving the author out of the discussion (Bracha, 2010). This first copyright law formed the basis for future copyright laws around the world (Bracha, 2010). It focused ownership protections on not only publishers, but also on authors. For example, the first 14 years of copyright would benefit the publisher, the subsequent 14 would compensate the author (Bracha, 2010). For books already in circulation, it provided a 21-year protection. Although it recognized the importance of the author's role, it neglected to clearly

define the author's rights (Bracha, 2010). It did, however, encourage public learning and regulate book trading (Bracha, 2010).

Copyright Act of 1790

This federal law expressly stated its intention was to promote learning while protecting the authors right to print, publish, and sell their books (The Copyright Act, 1790). Like the Copyright Act of 1710/ Statute of Anne enacted before it, the United States' version also gave copyright ownership protections for a term of 14 years (Yu, 2007). In fact, the entire Act that George Washington signed into law was nearly identical to its British predecessor (Yu, 2007). The only distinction was a 14-year protection for books already published, instead of 21 years (Yu, 2007). Unfortunately, for the British, the Copyright Act of 1790 only protected the work of Americans. For example, foreign authors, such as Jane Austen, who had works published in the United States could not receive royalties on those books. It would be another 100 years before this was rectified.

Patent Acts of 1790 and 1793

The Patent Act of 1790 was the first federal law to address patents. It, too, allowed owners to hold their rights for a term of 14 years, after which, the patent was not renewable by the owner (Prager, 1961). This was a point of contention for many innovators. Adding to their frustrations, the application process was complicated and lengthy with only three people authorized to approve patents – Secretary of State, Secretary of War, and the Attorney General. Foreigners were barred from the process altogether (Prager, 1961).

Within three years, it became evident that the law needed to be revised. The Patent Act of 1790 was repealed and replaced with the 1793 version. The issue of expiring patent terms would not be addressed until the Patent Act of 1836 with further revisions occurring in 1952

(Prager, 1961). The new Patent Act (1793) outlined a much simpler process for acquiring a patent. However, foreigners were still blocked from applying. To circumvent this, Americans learned they could pirate technology from other countries and legally patent it in the United States (Prager, 1961). This created a surge in patented, pirated innovations that contributed to propelling the fledging country forward.

Summary

The perception of freedom, independence, and ownership over land and lives converged with a sense of belonging that came from the intentional exclusion of "others," whether those others be the monarchy, the Indigenous population, or any colonist who was judged as unequal. This phenomenon brimmed over into all aspects of the Puritans' lives, including academia, developing them into an egocentric society, though touted as a theocentric one, and engendering another phenomenon – the acceptance of owning what is believed to be "mine."

When in England, Puritan dominance was restricted to the simple representation of one's individual family unit. The Puritans understood the importance of extending their dominance, as that yields ownership. Now in Massachusetts and Connecticut, the Puritans had assumed and mastered ownership of a new land; ownership of people; ownership over all biblical interpretation; ownership over university learning and ideas; ownership over economics; ownership of customs, rules, political policies, and now government and law. It is no surprise, then, that ownership over intellectual property itself would be next. In Chapter Three, the new structure of ownership that is established in law and embedded in culture is examined.

CHAPTER THREE: EXPANSION: A NEW STRUCTURE OF OWNERSHIP ESTABLISHED IN LAW AND EMBEDDED IN CULTURE 1801-1976

Overview

In Chapter Three, the evolution of the intellectual property construct moving the colonial colleges of Harvard and Yale toward their present state is expanded into a new era. With the winning of American independence, English Common Law is formally adopted as the general law except when a statute is otherwise present (Burnham, 2016). This system of jurisprudence is based on precedent, rather than statutory laws. Common Law is established by judges through written opinions that are binding on future decisions determined by lower courts within its jurisdiction (Burnham, 2016). Within this chapter, seminal Harvard and Yale intellectual property disputes during this time are analyzed. These are discussed in conjunction with other notable intellectual property case law and relevant legislation. For instance, original remedies differ from today's remedies. In an earlier epoch, injunctive relief was sought for trademark protection for consumers purchasing inferior products under misleading labels. Nowadays, injunctive relief is provided regardless of consumer confusion (Burnham, 2016). For this historical analysis, legislation and intellectual property case law are better understood through the lens of social influences, political development of a new nation, and a shift in religious attitudes. However, together, these culminate into a conundrum. As the colleges move forward through this intellectual property expansion of ownership possibilities, a lack of alignment with their original mission statements becomes apparent. To correct this, the colonial colleges simply revised their original purposes and created the idea of the research institution. Lastly, a summary closes the chapter.

American Legal and Economic Systems

Since the 1800s, Harvard and Yale have repeatedly interacted with the American variant of the Common Law system over an entire spectrum of issues. While neither institution is litigious, neither is diffident and their in-house counsel stands ready to mount a robust defense in response to a plaintiff or bring swift action against a defendant. Early on, Harvard and Yale understood that American Common Law is a consequential contributor to the United States' powerful economic system (Bastedo et al., 2016). This is due to stare decisis, the consistency and predictability of a system that relies on judicial opinion as precedent, allowing economic enterprises to pre-determine the boundaries in which to operate freely (Burnham, 2016: Landes & Posner, 2003). As such, institutions of higher education have become critical contributing factors for this nation's economic development acting as employers, entrepreneurial producers, investors, industry partners, and intellectual property innovators (Bastedo et al., 2016). Therefore, this three-way symbiotic relationship between university, economics, and law is a trifecta that first emerged when the nation was new.

American Common Law

Hallmarking the American Common Law system are seven principles: (a) stare decisis, (b) binding and persuasive authority, (c) court hierarchy, (d) jurisdiction, (e) primary and secondary authority, (f) the interrelationship of various sources of law, and (g) dual court system.

Stare decisis. "Stare decisis et non quieta mouvere" in Latin translates to "to stand by precedents and not to disturb settled points" in English (Burnham, 2016, p. 70). This principle of precedent signals that future similar cases should be decided in like manner as past ones (Burnham, 2016). Although this precedent principle survived in England and was transferred to the United States, it was rejected by the balance of Europe due to competition from the simpler

Roman-canon law and the French Revolution, which a legislative/ democratic approach was favored over judge-rule (Burnham, 2016).

Binding and persuasive authority. Some sources of law are determined to be binding (mandatory) while other sources are simply persuasive. Authority of a binding stare decisis requires lower-level courts to follow the decisions of higher-level courts within the same jurisdiction. Authority of a persuasive stare decisis negates the court's obligation to follow precedence; although, it may be persuaded to do so merely by reasoning (Burham, 2016). In essence, whether authority is binding or persuasive, the authority is determined by how stare decisis principles are applied (Fine, 1997).

Court hierarchy. The court level is a three-tiered structure consisting of the United States District Courts for trial-level courts, the United States Courts of Appeal for first level appeals courts, and the United States Supreme Court for final level arbitration of law (Fine, 1997). The hierarchy largely determines the extent to which a opinion by one court will have a binding effect on another (Fine, 1997).

Jurisdiction. The principle of jurisdiction connotates two different meanings. The first refers to the federal government's authority to exercise its judicial power over all people and things with regards to a specific matter, such as deciding a case or issuing a decree (Burnham, 2016; Fine, 1997). The second kind of jurisdiction involves a system of geographic jurisdictions to distribute courts into each of the three hierarchal levels. Federal jurisdictions consist of 94 trial-level district courts, 13 first level appellate courts, and only one Supreme Court (Fine, 1997).

The interrelationship of various sources of law. Various sources of law can be derived from both the state and federal legal systems and can interrelate with one another (Fine, 1997). Governing this interrelationship is a complex set of criteria that establishes priority (Fine, 1997).

Primary and secondary sources of law authority. These various law sources are divided into primary and secondary sources. Primary authority can be binding or persuasive depending on the court and other contributing factors (Fine, 1997). Conversely, secondary authority does not constitute actual law; therefore, it cannot be binding (Fine, 1997). Its usefulness is to (a) act as a guiding authority on how to resolve specific matters, (b) be a case finding tool, and (c) to yield additional information about a specific matter (Fine, 1997).

Dual court system. The role of the United States federal court is to administer justice fairly and impartially within the boundaries set forth by the United States Constitution and Congress. This is accomplished through providing language clarity for the Constitution and by narrowly defining statutory law which may be written broadly (Burnham, 2016). It is federal law that protects copyright and patent ownership, trademarks, and trade secrets, whereas state law offers some additional protections for trademarks and trade secrets (Burnham, 2016). Unlike state courts, federal courts are not, in and of themselves, generators of common law. Federal statutes, then, are derived from legislation.

Intellectual Property Legislation

Since the first Patent Acts were legalized in 1790 and 1793, many changes were afoot in the new nation. The seat of government was moved from Philadelphia to Washington, DC and Thomas Jefferson was no longer charged with patent approvals as Secretary of State. Instead, he had become John Adams' vice president; and, by 1801, he was elected president. The union's geographical shape was also changing. The Louisiana Territory had been purchased for $15

million and every couple of years more states were steadily added to the union (Berkin, Miller, Cherny, & Gormly, 2014). Lewis and Clark embarked on their western expedition of discovery and the Missouri Compromise was a way to maintain the balance between the number of free and slave states (Berkin et al., 2014).

Meanwhile, tensions continued between the British and the young Americans culminating in the War of 1812 over trade restrictions and westward expansion. The war ended in 1821 when Britain officially recognized the United States as an independent nation under the Treaty of Paris – but, not before the battles inspired Francis Scott Key to write the "Star-Spangled Banner" (Berkin et al., 2014). The Articles of Confederation and the United States Constitution were written (Berkin et al., 2014). The Monroe Doctrine became law forbidding any further foreign colonization of the United States and the Erie Canal opened (Berkin et al., 2014). By the year 1836, Texas was battling Mexico for its independence and in Washington DC, the need for a patent process organizational overhaul became apparent. Despite all of the changes introduced in 1836, a Patent Act revision would follow in 1952. Simultaneously, other intellectual property legislation was being introduced. Copyright legislation was first adopted in 1802 with revisions occurring in 1819, 1831, 1870, and 1909, with an enormous overhaul in 2016. Trademarks were formally addressed in their own Act in 1946. Finally, in 1971, the Sound Recordings Act was enacted and interacting with all of this intellectual property legislation were the colleges of Harvard and Yale.

Patent Act of 1836

The Patent Act of 1836 began the modernization and organization of the patent application process (Landers, 2017). This was accomplished through the establishment of an official Patent Office within the State Department. Although still in the State Department, the

Secretary of State would no longer be assigned to patent oversight. Instead, a new role, the Commissioner of Patents, was created to handle patent management and patent application processes (Patent Act, 1836). Besides the administrative changes, the law made the application process simpler for applicants and more efficient for the Patent Office. It also utilized libraries as a public resource for applicants to be able to check for the existence of all approved patents prior to making their making an application (Patent Act, 1836). Additionally, it gave patent holders the possibility for a 7-year extension to the original 14 years. Lastly, it lifted the prohibition on foreigners from owning United States patents. Thirteen years later in 1849, a further improvement was needed. The Patent Office was moved from the State Department to the Department of the Interior (Patent Act, 1836). Later in 1925, it was moved to its current residence within the Department of Commerce and is now entitled The Patent and Trademark Office (Landers, 2017).

Patent Act of 1952

The changes made to the patent law endured until 1952 despite economic depressions in the 1890s and 1930s when a fear of monopolies led to a mistrust of patents and yielded the Sherman Antitrust Act (Landers, 2017). In 1952, the previous Patent Act of 1836 was amended to require supplemental elements when applying to be a patent holder (Patent Act, 1952). No longer was it sufficient for an innovation to be merely new and useful. It now had to be non-obvious, meaning the product would not have been obvious to another individual with similar skills in the same field as the innovation (Patent Act, 1952). As technology advanced, patent appreciation increased and innovative discoveries were encouraged (Landers, 2017).

Copyright Act of Amendments in 1802 and 1819

After the Copyright Clause in the United States Constitution and the Copyright Act of 1790, two amendments followed. The first came in 1802 which required a copyright notice to inform others of the underlying claim of ownership on a work (Copyright Act, 1802). The consequence for neglecting to include this copyright notice would result in copyright invalidation, as decided by Ewer v. Coxe (1824). The 1802 amendment also included etchings as copyrightable material (Copyright Act, 1802). The 1819 amendment expanded the jurisdiction to hear copyright (and patent) cases to district courts (Copyright Act, 1819).

Copyright Act of 1831

By 1831, there was a realization that the current copyright protections were not sufficient and a subsequent revision was needed. Hence, the protective term was extended from the original 14 years to 28 years with a potential expansion of an additional 14 years (Copyright Act, 1831). This revised Act was more in keeping with copyright laws of Europe. Now, American copyright owners were offered the same protections as their European counterparts and it not only covered their future works, but it also included current copyrighted works whose term had not yet expired (Copyright Act, 1831). This version also protected music compositions (Copyright Act, 1831). Three years later another provision was added – copyrights became transferrable. By 1846, copies of the copyrighted work had to be deposited at the Smithsonian and the Library of Congress, which were now no longer functioning solely as museum and library, respectively, but were expanded to function as repositories (A Brief History of Copyright in the United States, n.d.). In 1865, photographs became copyrightable (A Brief History of Copyright in the United States, n.d.).

Copyright Act of 1870

The impact of the Copyright Act of 1870 was threefold because it not only affected copyrights, but patents and trademarks, as well. As such, it is also known as the Patent Act of 1870 and the Trademark Act of 1871. For copyrights, the Act finally enabled authors to own the copyrights of their translated works (Copyright Act, 1870). The Act also moved copyright registrations from district courts to the new Library of Congress Copyright Office (Cole, 1971). For creators of fine arts, protections for paintings and sculptures were also included in the Act. For patents, the United States Patent Office was formally recognized and given the authority to determine patent conflict resolutions in "first to invent" and "first to file" disputes (Copyright Act, 1870). Finally, for trademarks, this was Congress' first attempt to formally recognize trademarks (Copyright Act, 1870). However, the language in the Act was ambiguous and caused confusion between copyrights and trademarks because both invoked the Copyright Clause as pointed out by Librarian Ainsworth Spofford who advocated for change (Cole, 1971). The Supreme Court agreed with Spofford and ruled that the ambiguity between copyrights and trademark was not appropriate, which sent Congress to reexamine the Trademark concept. One year later, it was reinstituted under the Commerce Clause (Patry, 1994).

International Copyright Treaty of 1891

Copia, in Latin, translates to "plenty" in English. Therefore, the original idea of copyright was to produce plenty of copy (Kampelman, 1947). However, by 1891, the United States was engaged in the modern concept of pirating due to copyright laws prohibiting foreigners to hold copyrights of their works when they were published in America (Kampelman, 1947). Because of this practice, American publishing houses were able to sell inexpensive copies of European authors' works and keep all of the profits for themselves (Kampelman,

1947). In acts of retribution, foreign nations reacted in like manner against American authors. The International Copyright Treaty arose when unions representing authors, printers, and publishers banded together to advance change towards international cooperative and reciprocal copyright protections (Kampelman, 1947).

Copyright Act of 1909

More revisions were needed with the Copyright Act and by 1909, the protected categories grew to encompass all works of authorship (Copyright Act, 1909). Additionally, it lengthened the federal statutory protections to 28 years with a potential extension of another 28 years (Copyright Act, 1909). The Act also gave legal rights for anyone to make a mechanical recording (via a phonograph record) of any musical composition without the permission of the copyright owner as long as the compulsory license was followed and the copyright holder was paid a set fee for the license (Copyright Act, 1909).

Copyright Act of 1976

With the Copyright Act of 1976, the Copyright Act of 1909 was repealed and replaced. The 1976 version was engendered because of two major developments. First, technological advances and their influences on copying methods of copyrighted material may cause copyright infringement (Alexander & Alexander, 2017). Second, it needed to be reevaluated in anticipation of the Berne Convention which would expect the United States to align itself accordingly with international copyright processes and law (Alexander & Alexander, 2017). There were also benefits for the copyright holder - federal statutory protections were extended to their entire life plus an additional 50 years after their death (Alexander & Alexander, 2017; Copyright Act, 1976). The new Act also attended to scope and subject matter areas, exclusive rights, copyright notice and registration, infringements, defenses and remedies for infringements,

and fair use (Alexander & Alexander, 2017; Copyright Act, 1976). With fair use codified as the Fair Use Doctrine, permission to copy copyrighted material in certain instances became acceptable on a specific "case by case basis" if four factors were first considered (Alexander & Alexander, 2017, p. 732). These include (a) purpose and character of use, (b) the nature of the copyrighted work, (c) the portion used in relation to the whole, and (d) the effect of the use on the potential market (Alexander & Alexander, 2017). Some examples of fair use may include the purposes of scholarship, teaching, and research, as well as journalism or preservation.

Trademarks – The Lanham Act of 1946

As discussed in Chapter One, the Lanham Act gave the United States Patent and Trademark Office (USPTO) the authority to register all trademarks (Brown, 1999). The Act created a federal system for trademark registration. To be eligible for federal statutory protections, trademarks must be in use in commerce and be distinctive (Lanham Act, n.d.). Each of these requirements is defined in the Lanham Act. For the "in use in commerce" stipulation, if the trademark is not already in use, an applicant may still register for it by expressing a good faith intent (Lanham Act, n.d.). However, the trademark will be given to the filer who uses it first in commerce. For the "distinctive" qualification, a trademark must be identifiable and distinguishable to represent particular goods (Lanham Act, n.d.). They are divided into the fanciful, suggestive, descriptive, and generic categories (Lanham Act, n.d.).

The Sound Recordings Act of 1971

Because the Copyright Act of 1909 included all author's "writings" for protections, sound recordings were not originally viewed as writings (Kastenmeier, 1971). Due to numerous unauthorized duplications of sound recordings by the 1970s, plus the courts' narrow view on what comprised a writing, a Congressional legislative act was necessary to address other

protectable property (Kastenmeier, 1971). The Sound Recordings Act of 1971 covered this gap (Kastenmeier, 1971). Public performances, though, were still not recognized as needing federal statutory protections.

Case Law

Interwoven between this intellectual property legislation, are legal cases that further clarified the law. For Harvard and Yale, their first interactions with the new American Common Law were largely centered on either real property or personal property. Over time, intellectual property became to be understood as an embodied form of personal property (Burnham, 2016). As such, the transition was natural from property litigation to intellectual property litigation. Just as the Harvard and Yale institutionalists understood that property ownership yields control and power, they quickly found that same principle applied to intellectual property ownership, as well; and, by 1934, Harvard had already developed a patent and copyright ownership policy for innovative works in health and therapeutics (Statement of Policy in Regard to Intellectual Property, 2021). The following is a look at some of Harvard and Yale's early interactions with law where property ownership was asserted.

Harvard Legal Disputes

Harvard College and Massachusetts General v. Francis Amory (1830). The earliest example of a property case involving Harvard centered around trust property. Upon the death of John McLean, his will stated that his spouse, Ann McLean, would receive $35,000. An additional $50,000 would be placed in a trust whose investments would yield interest payments for Mrs. McLean (Pickering, 1831). The trustees entrusted with these investments were Jonathan Amory and Francis Amory, who were to abide by the trust's stipulation that the principle be invested in a productive stock using their sapience (Pickering, 1831). John McLean died during

this time of the trust's execution leaving Francis McLean as sole trustee. Upon the death of Mrs. McLean, the principle was to be divided equally between Harvard College and Massachusetts General Hospital (Pickering, 1831). However, there was a problem. Francis McLean chose to invest in manufacturing companies and insurance companies and there was nothing left to donate to Harvard and Massachusetts General, who were anticipating the funds (Pickering, 1831). Although the will preemptively exonerated the trustees from any liability of losses, Harvard and Massachusetts General chose to sue Amory for his choice of investments, which they deemed were negligent. On appeal, the judge, Massachusetts Justice Samuel Putnam, found that Amory had fulfilled his fiduciary duty despite the losses and was not liable (Pickering, 1831). This case gave American law the "prudent man rule," which indicates that individuals tasked with investing other people's money must do so in the same manner as if they were investing their own (Pickering, 1831). This means that speculative investments should be avoided and each investment should be given due diligence (Pickering, 1831). More interesting, this case showed that Harvard would take others to court in order to receive what they perceived to be theirs.

Pierce v. Inhabitants of Cambridge (1849). A property taxation case, Pierce v. Inhabitants of Cambridge (1849), was brought by Professor Pierce and his family who lived in a property owned by Harvard and located within Harvard Yard. Pierce's annual salary was $2,000 and $400 of that ($33.33 per month) went towards rent (Pierce v. Inhabitants of Cambridge, 1849). When it came time to pay taxes on the property, Harvard left them to the lessee. After Pierce begrudgingly paid the annual property tax bill of $33.60, he determined he may be able to claim Harvard "officer" status, which would have exempted his paying property taxes on the house (Pierce v. Inhabitants of Cambridge, 1849). However, the homes of Harvard officers were used for literary, scientific, charitable, or benevolent purposes – and Pierce's home was not

(Pierce v. Inhabitants of Cambridge, 1849). The Court did not rule on his being an officer of Harvard due to it being a moot point since Harvard recognized him as a lessee (Pierce v. Inhabitants of Cambridge, 1849). As such, Pierce lost his case. The judge cited that allowing lessees in similar situations would place an undue financial burden on all inhabitants of Cambridge (Pierce v. Inhabitants of Cambridge, 1849).

President and Fellows of Harvard College v. Board of Aldermen of City of Boston (1870). First, many of the following legal disputes in this chapter and the next have "President and Fellows of Harvard College" in the case name. This is the formal title of the Harvard Corporation, which is the oldest corporation in the western hemisphere. Now with regard to this case, although this complaint was filed by Harvard in 1870, it was based upon a parcel of land bequeathed to the college in 1660.

For 200 years, all was well until the Board of Aldermen representing the City of Boston voted to widen a street using a rear portion of the bequeathed parcel (President and Fellows of Harvard College v. Board of Aldermen of City of Boston, 1870). To finance this project, the Aldermen placed an assessment on the property citing that the college had never paid taxes on the given property (President and Fellows of Harvard College v. Board of Aldermen of City of Boston, 1870). Harvard sought a writ of certiorari, which is Latin for "to make certain (by being more fully informed)" by seeking a judicial review of the lower court's decision (Black, 2016, p. 109). Harvard desired to quash (terminate by making null or void) the proceedings of an assessment being placed on the property and argued that their college's charter implicitly stated that the school would be exempt from civil impositions (Black, 2016; President and Fellows of Harvard College v. Board of Aldermen of City of Boston, 1870). The college's charter

preempted the town's charter even though the land was deeded to the school after the town's charter (President and Fellows of Harvard College v. Board of Aldermen of City of Boston, 1870).

The Court found that the land assessment was a form of taxation, which was considered a civil imposition (President and Fellows of Harvard College v. Board of Aldermen of City of Boston, 1870). Therefore, the writ of certiorari was granted and the school was exempt from the assessment (President and Fellows of Harvard College v. Board of Aldermen of City of Boston, 1870). Although the Court found in favor of Harvard, the president and fellows of Harvard do not seem to have considered the ethics involved. The road needed to be widened due to Harvard's presence in Cambridge and the school would be a primary beneficiary of the project. Yet, the improvement's financial burden was placed on the City and its citizens.

Puente v. President and Fellows of Harvard College (1957). This intellectual property case was over an idea that Puente shared with Harvard Law School Dean Griswold via 15 letters and a telegram. Puente contends that Griswold deceived him into disclosing the idea for a loose-leaf tax service for seven Latin American countries (Puente v. President and Fellows of Harvard College, 1957). After considering the idea, Griswold notified Puente he was no longer interested in pursuing the idea (Puente v. President and Fellows of Harvard College, 1957). Yet, four years later, Harvard Law School pursued a remarkably similar idea by announcing that, in cooperation with the United Nations, it was undertaking a project that involved the collection and publication of foreign tax information into a series (Puente v. President and Fellows of Harvard College, 1957). When Puente heard his general idea was becoming a reality, he filed a complaint in four courts; however, it was determined his idea was neither new nor novel (Puente v. President and Fellows of Harvard College, 1957). The result was a district court dismissal that would later be

affirmed by an appeals court. Lueddecke v. Chevrolet Motor Company and Lawson v. American Motorists Insurance Corporation were cited as precedent demonstrating that Harvard understood the role of stare decisis, which enabled them to operate freely within the pre-determined boundaries of the law (Burnham, 2016; Landes & Posner, 2003).

Yale Legal Disputes

Yale University Press v. Row, Peterson, and Company (1930). As a compiler, illustrator, and publisher of reference books, Yale University Press, an official department within Yale University, filed a preliminary injunction against school textbook publisher Row, Peterson, and Company over two type of copyright infringements. They are (a) piracy by copying original text and original illustrations and (b) piracy using illustrations that Yale University Press came to own (known as unfair use) (Yale University Press v. Row, Peterson, and Company, 1930). The specific book at the center of this complaint was the United States history book, "The Pageant of America" which contains over 9,000 illustrations (Yale University Press v. Row, Peterson, and Company, 1930).

In the textbook publisher's "The Growth of a Nation" and "The Story of a Nation," there a total of 520 illustrations (Yale University Press v. Row, Peterson, and Company, 1930). Of these 520, 154 were identical to "The Pageant of America" (Yale University Press v. Row, Peterson, and Company, 1930). Even so, the injunction was denied by the Court. Had it been successful, the textbook publisher would have been in violation of contractual agreements causing irreparable injury of timely delivery of textbooks to school districts in two states (Yale University Press v. Row, Peterson, and Company, 1930). The Court, instead, ordered the textbook publisher to file a bond to assure recovery by Yale University Press upon final

adjudication and provide monthly accounting statements to Yale (Yale University Press v. Row, Peterson, and Company, 1930).

Yale University v. Town and City of New Haven (1950). Over the years, Yale University and New Haven have repeatedly found themselves on opposing sides of a court room. In this case, Yale filed a complaint because the city was taxing the Yale residential properties of married veteran students who returned to resume their studies after World War II (Yale University v. Town and City of New Haven, 1950). As such, Yale argued that these buildings were used for educational purposes and not taxable even though some buildings had other public uses prior to their emergency conversion for housing married veteran students (Yale University v. Town and City of New Haven, 1950). The test of property taxability was not whether a lessor-lessee relationship was present or whether Yale gained revenue from said relationship, but instead, whether the students' residential living accommodations promoted Yale's educational objectives (Yale University v. Town and City of New Haven, 1950). The Court entered judgment for Yale who recovered overpayment of taxes from the city and all properties in question were removed as taxable properties (Yale University v. Town and City of New Haven, 1950).

Yale University v. Benneson (1960). In 1960, Yale claimed trademark rights. A business owner of a motor inn in the Yalesville section of Wallingford named their motel "Yale Motor Inn" after the influential benefactor who helped fund the college (Yale University v. Benneson, 1960). In so doing, it placed the motel's owner, Edward Benneson in a legal battle with Yale after the college filed an injunction barring the usage of the name by his motel (Yale University v. Benneson, 1960). Because both organizations were operating in the same state, the school's injunction stated that the motel's name may cause the public to be deceived or confused

about a potential affiliation with the school (Yale University v. Benneson, 1960). The trial court applied this test and determined any confusion between the two entities would result from ignorance or carelessness, rather than deception or confusion (Yale University v. Benneson, 1960). Therefore, Yale's injunction was denied and Yale Motor Inn's name went unchanged. This case shows the vigor with which Yale would protect intellectual property to which it laid claim – regardless of their adversary just being a small business owner in a non-competitive industry 15 miles away.

Yale University v. City of New Haven (1975). The City of New Haven appealed a decision from the Court of Common Pleas which found that Yale's real and personal property was nontaxable between the years of 1969 – 1972 citing the college's charter (Yale University v. City of New Haven, 1975). The trial court held that Yale was to be reimbursed for the taxes paid plus interest for those years (Yale University v. City of New Haven, 1975).

Notable Intellectual Property Lawsuits

United States v. Dubilier Condenser Corporation (1933). In United States v. Dubilier Condenser Corporation, F. W. Dunmore and P. D. Lowell were hired by the U. S. Department of Commerce as radio testers. While employed with the United States government in 1921, Dunmore and Lowell conceived of, and began developing, patentable improvements to radio technology as a side endeavor to their government positions (United States v. Dubilier Condenser Corporation, 1933). Upon completing their innovations in 1922, Dunmore and Lowell sold their patents to Dubilier Condenser Corporation. Soon, the government learned of this transaction and sued its employees because it assumed that any patents stemming from related research would inherently be assigned to the government (United States v. Dubilier Condenser Corporation, 1933). As property, a patent's title can only pass by assignment;

however, Dunmore and Lowell were not hired to be researchers by the government, which left the idea of assignment of their innovations in flux (United States v. Dubilier Condenser Corporation, 1933). After many years, the case made its way up to the Supreme Court, where it affirmed the lower courts' decision and outlined that employers' rights on an employee's creation only extend to the invention if the employee was explicitly hired to invent (United States v. Dubilier Condenser Corporation, 1933). This case became precedent for those similar involving employees of higher education institutions.

Simmons v. California Institute of Technology (1949). This landmark case set the precedent for academic intellectual property commercialization. Simmons v. California Institute of Technology surrounds the work of a former graduate engineering student, Edward Simmons. After graduation, he was hired by the university as an hourly-based employee and used as a consultant on Donald Clark's research project, known as "Impact Research" (Simmons v. California Institute of Technology, 1949). Though he had yet to begin his formal appointment as a full-time university fellow, California Institute of Technology utilized his contributions in the project. However, once Baldwin Locomotive Works became interested in commercializing the new technology, faculty member, Dr. Clark, fraudulently persuaded Simmons to sign a contract indicating Simmons' share of royalties would be reinvested into the research project (Simmons v. California Institute of Technology, 1949). This act enabled the university to deny Simmons his portion of royalties (Simmons v. California Institute of Technology, 1949).

When Simmons realized that fraud had occurred, he sued the institution and entered into a 13-year long legal battle with the institution. Although a lower court had decided that Simmons should receive his share of royalties, the Supreme Court of California ultimately held that a license and royalty agreement between Simmons and the university (Exhibit A) was

separate from the license and royalty agreement between Simmons and Baldwin Locomotive Works (Exhibit B (Simmons v. California Institute of Technology, 1949). The remedy sought by Simmons was based on Exhibit A's rescission making the agreement null and void (Simmons v. California Institute of Technology, 1949). Because Exhibit B was predicated on Exhibit A, it too should be null and void (Simmons v. California Institute of Technology, 1949). The Court found this argument not to be persuasive.

Sociocultural Influences

Between the years 1801-1976, the United States went through an enormous sociocultural shift that further matured the nation and solidified Harvard and Yale's thinking on identity and intellectual property ownership. With the Founding Period behind them, Americans moved on to realizing a more perfect union; and, while many felt emboldened by this new democracy and set their eyes on innovative interests, others remained disenfranchised.

Politics and Human Rights

The slave trade was still a sinister machine whose product affected generations of Black families whose very lives were predetermined by those who owned them. Women, who were routinely deprived of the right to participate fully in society were devising ways to engage with their male counterparts over equal rights. In 1809, when many states forbade women to own property independent from their husbands, Mary Dixon Kies applied for a patent (America's Story from America's Library: Mary Kies, n.d.). Kies had invented a method for weaving silk and straw together for hat-making purposes (America's Story from America's Library: Mary Kies, n.d.). Her invention was granted intellectual property protection and she became the first woman in the nation to hold a patent (America's Story from America's Library: Mary Kies, n.d.). In 1831, Yale graduate Eli Whitney produced the cotton gin using his 1794 patent, which

had not been validated until 1807 (Berkin et., 2014; Kelly, 2013). The invention ultimately increased the demand for slave labor by making it sustainable (Berkin et al., 2014).

Meanwhile, the nation's borders were expanding to encompass southern and western territories in a novel idea epitomized as "manifest destiny" (Berkin et al., 2014). Not only were Americans drawn to settling other regions, but they were also interested in the western territories as a convenient place to relocate the eastern Indigenous people. With the Indian Removal Act, the diaspora of these people to property west of the Mississippi River became legal and displaced 50,000 individuals within one year (Berkin et al., 2014). By 1829, the nation's population had swelled to four million people with more immigrants continuing to arrive (Berkin et al., 2014). Throughout the 1800s and 1900s, more states were added to the union continually changing its shape. In 1857, the landmark case Dred Scott v. Sandford (1857) was decided by the Supreme Court and held that Congress does not have the right to ban slavery in states and that slaves were not considered citizens. Growing tensions regarding the morality and rights of slavery culminated into Civil War between the United States and those southern states who joined together as insurrectionists (Berkin et al., 2014).

At the helm of the nation and tasked with holding it together during this tumultuous time was President Abraham Lincoln. By 1863, President Abraham Lincoln had signed the Emancipation Proclamation, an act that freed many slaves; however, emancipating those slaves in border states would require an amendment to the Constitution and in December 1865, the Thirteenth Amendment was ratified and freed all slaves (Berkin et al., 2014). Afterwards, a period of reconstruction to repair the commerce and conscience of the nation began, coupled with a focus on industrialization (Berkin et al., 2014). Only five years on, Black men would be given the right to vote (Berkin et al., 2014). However, the notion of separate but equal took hold

and became legal with Plessy v. Ferguson (1896), the Supreme Court decision that held segregation as constitutional.

While White men of the courts were mulling over how Black and White citizens could coexist, women representing every ethnicity were advocating for the right to vote. Finally, 50 years after Black men could vote, women were afforded the same right with the Nineteenth Amendment in 1920, while simultaneously fighting the Spanish Flu pandemic, caring for their families, debating oppositionists, and supporting the nation during World War I, women were also campaigning for the right to vote (Berkin et al., 2014). Infiltrating the halls of Harvard and Yale proved harder and took even longer.

After World War II, despite applying to Harvard, women were only admitted to Harvard's female coordinate institution – Radcliffe (Harrison, 2012). However, with the United States' controversial involvement in the Vietnam War, social, political, and cultural changes were afoot. The result was a cultural revolution that benefitted those who had been deprived of equal opportunities. In 1967, women were given access to Harvard's main library and in 1977, they were granted admission to the school (Harrison, 2012). Similarly, in 1969, women were finally accepted into Yale (Women at Yale, 2019). Interestingly, as society demanded Harvard and Yale relinquish control in some areas, in other areas, such as intellectual property ownership, the institutions' control only tightened.

The Arts

With the divisiveness felt by some in the nation, the arts offered a sense of belonging in shared, cultural spaces. Art, music, and literature began to capture a sense of nationalism that was unique from the rest of the world.

Fine arts. With the westward expansion, paintings began depicting the Romanticism view of American landscape. There was also an interest in historical pieces documenting consequential moments in American history like "Washington Crossing the Delaware" by Emanuel Leutze (Pohl, 2002). In 1870, the Metropolitan Museum of Art opened in New York City placing the city on its path of becoming art's epicenter (American Art, 2021). In the late nineteenth century/early twentieth century as Impressionism swept Europe, a version of American Impressionism led by Mary Cassatt gained prominence in the United States (Pohl, 2002). As the 1900s progressed, American Realism portraying ordinary life in the city would find its place in history and later impact Social Realism (Pohl, 2002). Simultaneously, American Regionalism gained popularity through work like Norman Rockwell's portrayal of life in New England and Grant Wood's "American Gothic" portrait of farmers in the Midwest (Pohl, 2002). Finally, mid-century experimentation with abstract expressionism from artists such as Jackson Pollock influenced modernism and postmodernism – all mirroring a maturing nation that illustrated self and societal expression (American Art, 2021; Pohl, 2002).

Music. Music and dance were another avenue that led to the nation's self-identity. While Classical Europe was creating moving symphonies and poignant operas, the United States produced a plethora of music with which to identify. From African American spiritual songs to Yankee anthems and immigrant folk songs, to the invention of ragtime, jazz, blues, country, rock and roll, and disco to the debut of the musical, American music represented all who made the United States their home (How Music Built America, 2021). Amplifying the reach of this music were the patented American inventions of the radio and the microphone (University of Georgia's Special Collections Library, n.d.).

Literature. Writers were also contributing to culture through American literature. During the Early National Period ending in 1830, Bostonian Edgar Allen Poe gave the nation short stories and poems that reflected the helplessness he felt surrounding his brother's passing and the financial panic of 1837 (Brief Timeline of American Literature, 2013). During the Romantic Period years of 1830-1870, Salemite Nathanial Hawthorne offered Dark Romanticism short stories, such as "The Scarlet Letter" and "The House of the Seven Gables" (Brief Timeline of American Literature, 2013). Realism and Naturalism defined 1870-1910 and yielded works like Mark Twain's "The Adventures of Huckleberry Finn" (Brief Timeline of American Literature, 2013). The Modernist Period followed and ended in 1945 and provided the nation the poetry of New Englander Robert Frost and F. Scott Fitzgerald's "The Great Gatsby" (Brief Timeline of American Literature, 2013). In the Contemporary Period, Harper Lee gave America "To Kill a Mockingbird" (Brief Timeline of American Literature, 2013). Each period offered uniquely American stories which served to unify a shared American experience.

Innovation Interests

During 1801-1976, individuals and universities around the world were creating products that would enrich culture and humanity in various areas. In 1816, in the year without a summer, English novelist and mother Mary Wollstonecraft Shelley penned "Frankenstein," before Charles Dickens, Bram Stoker, and Edgar Allan Poe contributed to the gothic novel genre. In 1921, Frederick G. Banting, Charles H. Best, and J. J. R. Macleod at the University of Toronto discovered insulin thereby extending the life expectancy for those with Type 1 Diabetes from infancy to adulthood. Four years later in 1926, Robert Goddard invented rocket fuel while at Clark University in Worcester, Massachusetts (Hunley, 1995). The 1930s found Eli Franklin Burton, Cecil Hall, James Hillier, and Albert Prebus designing the electron microscope while at

the University of Toronto (Newberry, 2007). During that same decade, the University of Oxford's Howard Florey was toiling and finally gave humanity the healing gift of penicillin in 1939 (Nobel Prizes & Laureates, 2021). Only fifteen years later in 1946, John W. Mauchly and J. Presper Eckert of the University of Pennsylvania invented the first modern computer, which would ultimately revolutionize all aspects of global life (Norberg, 2016).

In 1955, teeth were made stronger, thereby lasting longer, thanks to Joseph C. Muhler and William Nebergall adding fluoride to toothpaste at Indiana University (National Inventors Hall of Fame, 2021). The University of Florida's Robert Cade concocted Gatorade in 1965, which not only better hydrated athletes and created a new sports tradition with the victors' Gatorade Shower, but it also proved to have enormous economic benefit, as well (Kays & Phillips-Ham. 2002). After a legal settlement in the 1970s between Robert Cade and partner Stokely-Van Camp, Inc. and the University of Florida over ownership rights, the parties agreed to a royalty distribution of 20% for the University of Florida, yielding them $12 million per year since 1973 (Kays & Phillips-Ham, 2002). Lastly, polio with its paralytic effects, was eradicated in the United States due to the efforts of Jonas Salk at the University of Pittsburg in 1966 (Tan & Ponstein, 2019).

Harvard. Meanwhile at Harvard specifically, cultural contributions were also underway. In 1946, Harvard's Edward M. Purcell was a co-winner of the Nobel Prize in Physics for his nuclear magnetic resonance technology used in medical imagining (Harvard Discoveries, n.d.). During this same period, more medical devices were devised. Boston Latin School and Harvard graduate, Paul Zoll, invented the modern defibrillator and heart pacemaker in 1947 and 1952 respectively, each having since saved countless lives by correcting heart rhythm disturbances (Harvard Discoveries, n.d.). Throughout the 1950s, George Wald identified the importance of

Vitamin A for vision and that its deficiency contributes to color-blindness, which won this Harvard scholar a Nobel Prize in Medicine and Physiology in 1967 (Harvard Discoveries, n.d.). In 1971, Harvard graduate Judah Folkman detected the process by which tumors draw in area blood vessels for sustenance and survival, thereby increasing the understanding of how blood vessel tumors and cancers grow and spread (Harvard Discoveries, n.d.).

Yale. Like Harvard, Yale was exploring innovations during this time. To better foster cultural modernization, a formal engineering program was developed in 1852; and, in the 1860s, a mechanical engineering Yale professor, August Jay DuBois scribed four engineering textbooks that laid the groundwork for this program and others (Kelly, 2013). By 1932, the engineering program had blossomed into the Yale School of Engineering (Kelly, 2013). In other areas, in 1946, molecular biology gained ground through the research of Yale professors, Josh Lederberg and Edward Tatum and their discovery of bacterial recombination as a mechanism to understand biochemical genetics using E. coli as a subject (Lederberg & Tatum, 1946; Yale Discoveries, n.d.). Later, Lederberg would study anthrax and serve on the United States Defense Science Board and President Jimmy Carter's Cancer Panel; further, for his contributions towards the greater good, President George H. W. Bush awarded him with the National Medal of Science (Nobel Prizes & Laureates, 2021).

Religious Attitudes

With cultural influences and innovative interests beyond the Bible and the propagandized writings of the early Puritan colonies, a concurrent shift in religious attitudes was underway. In the early 1800s, the Founding Period had closed and gave way to a Second Great Awakening and the Restoration Movement, which ensured a Protestant worldview would be embedded in the nation (Association of Religion Archive Data, n.d.). By, 1836, many intellectuals in New

England became adherents of Transcendentalism and explored the relationship between humans and nature (Berkin et al., 2014). In the meantime, many Christians engaged in various Millenarian Movements predicting Jesus' return and end times (Association of Religion Archive Data, n.d.). In 1856, Charles Darwin published his "On the Origin of Species," which was followed by a less literal interpretation of the Bible through Christian Modernism (Berkin et al., 2014). Also, by the mid-1800s, involvement with spiritualism and mysticism as a way to commune with the dead was accepted by some (Association of Religion Archive Data, n.d.). Around that same time was the Third Great Awakening, which lasted until the 1920s. A Charismatic/ Pentecostal Movement began as some Christians became filled with the Holy Spirit and as such, gained the ability to speak in tongues (Association of Religion Archive Data, n.d.). For those representing various denominations, there was an effort to unite Protestants during the Ecumenical Movement (Association of Religion Archive Data, n.d.). Due to all of the social changes during the mid-1900s, there was an effort to counter liberal biblical interpretations with the Christian Fundamentalism Movement. Also, during this time, interest grew in a nation devoid of religion with the Secular Movement.

In response to the changing attitudes on religion, New Evangelism emerged by socially engaged conservatives (Association of Religion Archive Data, n.d.). Interest in mysticism returned during the 1960s with New Age Religion. In the 1970s, renewed focus was placed on compelling marketing strategies for the Church Growth Movement. This was followed by the Religious Right Movement to use politics as a way to address moral decline. Finally, in an effort to be more inclusive and aware of social injustices, progressive Protestants began the Progressive Christian Movement.

Mission Statements Revised

The changes in religious attitudes and cultural interests are reflected by the mission statements of Harvard and Yale. Again, as presented in Chapter Two, the original mission statement of Harvard surrounded the life of the Christian student. It stated:

> Let every student be plainly instructed and earnestly pressed to consider well the maine end of his life and studies is to know God and Jesus Christ, which is eternal life, and therefore to lay Christ in the bottom as the only foundation of all sound knowledge and learning and seeing the Lord only giveth wisdom, let everyone seriously set himself to prayer in secret to seek it of him. (DeMar, 1995, pp. 102-103)

After the dissociation with Protestantism and the original mission statement of the college was abandoned, the mission statement was replaced with a resected quote from the College's original Charter. It simply stated, "In brief: Harvard strives to create knowledge, to open the minds of students to that knowledge, and to enable students to take best advantage of their educational opportunities" (Harvard Mission Statement, 2013).

A similar position was taken at Yale as they became more areligious. As discussed in Chapter Two, the mission of Yale was to be a place where "Youth may be instructed for Publick employment both in Church and Civil State (Kelley, 1974, p. 7). Further, the purpose of a Yale education was so "Every student shall consider ye main end of his study, to wit to know God in Jesus Christ and answerably to lead a Godly sober life" (Dexter, 1885a, p. 347). Later, this was replaced with:

> Yale is committed to improving the world today and for future generations through outstanding research and scholarship, education, preservation, and practice. Yale educates aspiring leaders worldwide who serve all sectors of society. We carry out this

> mission through the free exchange of ideas in an ethical, interdependent, and diverse community of faculty, staff, students, and alumni. (Yale Mission Statement, n.d.)

While the themes of citizenship and leadership may have biblical connotations, biblical references had been wholly eliminated in the mission statements by this point. Instead, the missions of the two early seminaries were reprioritized to reflect the more ambiguous roles of producers of good people, good things, and good environments. Omitting scriptural foundations suggested a relinquishment of God's control, which offered the universities freedom to rebrand themselves as competitive research institutions.

Summary

With the Founding Period closing and the Early National Period opening, the intellectual property construct was moved further along in this new era. An American variant of English Common Law was adopted and the system of jurisprudence, based on judicial precedent rather than statutory laws, was in place. Relevant legislation and case law were presented, noteworthy Harvard and Yale intellectual property legal disputes were examined, and injunctive relief was discussed as a remedy. Because this is a historical analysis, law is understood more clearly from the perspective of historical sociocultural influences. Politics, human rights, and the arts combined to ingrain a socio-cultural identity unique to Americans and by way of, an identity unique to the colonial colleges of Harvard and Yale. This intrinsic identity is inseparable from the institutions' modi operandi when interacting with American Common Law and legislation during ownership claims of real or intellectual property. This, combined with changing religious attitudes, Harvard and Yale became products of the world around them. However, this world did not align with their original mission statements. To correct this, the missions of both colleges were revised and the idea of the research institution for the development of good was created.

While both colleges relinquished control in some areas, their control only tightened in others as they now became producers of consequential intellectual property. In Chapter Four, this rise of dominium (absolute ownership and control of property) is examined.

CHAPTER FOUR: THE RISE OF DOMINIUM: 1977-2020

Overview

Chapter Four moves the colleges into recent years that have yielded more intellectual property ownership filings of complaints, patents, and copyrights than all of the prior years combined. As American ideals change and technology advances quicken, interests in intellectual property opportunities are pursued giving rise to capitalistic competition. Ownership becomes more than a matter of pride and principle; it becomes a position of power. He who holds intellectual property ownership determines the direction of significant knowledge that can potentially be commercialized. In Chapter Four, the rise of commercialization is examined. As Harvard and Yale claim to be honoring innovation, the idea that knowledge can be hoarded emerges. Just as some products can be introduced into the market for financial gain, others may be purposefully kept out to redirect the consumption of alternate innovations (Rooksby, 2016). Harvard and Yale's intellectual property ownership motivations continue to be explored. Mission statements are again revised, and university intellectual property policies are developed to protect university stakeholders. Common good within their respective communities is touted as university discoveries become intellectual capital and their economic impact is explored. Once again, legislation and notable intellectual property case law relating to Harvard and Yale are analyzed. Finally, a summary closes this fourth chapter.

Honoring Innovation or Hoarding Knowledge

By now, there is widespread acceptance of the construct that intangible items can possess property interests. Left for debate, though, is the issue of who should hold the ownership rights of the intellectual property. Proponents believe in the value of honoring innovation by providing

incentives for producers of inventive works. Conversely, critics equate owning creative works as a way to control and collecting what should be free and equitable access to knowledge. (Merges, 2011)

Mission Statements Once Again Revised

As discussed, reverential language from Harvard's Charter was omitted completely with the last revision of their mission statement. The most current rendition is now centered on citizenship and leadership in the statement, "The mission of Harvard College is to educate the citizens and citizen-leaders for our society. We do this through our commitment to the transformative power of a liberal arts and sciences education" (Harvard Mission Statement, 2013).

Meanwhile, Yale merely shortened their last revised mission statement. It now reads, "Yale is committed to improving the world today and for future generations through outstanding research and scholarship, education, preservation, and practice. Yale educates aspiring leaders worldwide who serve all sectors of society" (Yale Mission Statement, n.d.). Yale, too, is focused on the service of leadership, but has also circled back to the basics of translatio studii by emphasizing the generational transfer of valued knowledge and the tradition of scholarship – a practice typical of research institutions.

Not mentioned, in either of the contemporary mission statements, is the incented mission to competitively pursue federally funded research and development and the associated substantial economic rewards from intellectual property ownership. This mission of Harvard and Yale turned these Puritan seminaries practicing translatio studii into economic enterprising institutions needing intellectual property policies in place as a means to mitigate potential legal disputes.

Intellectual Property Policies Developed

At Harvard, by 1975, the need to codify their extant patent and copyright practices from 1934 became apparent. The result was the formation of the Office of Technology Development and a "Statement of Policy in Regard to Inventions, Patents, and Copyrights" which underwent amendments once per decade in 1986, 1998, and 2008. Since that time, emendations have come in more rapid succession in 2010, 2013, and 2019 with the current revision simply entitled, "IP Policy" (Statement of Policy in Regard to Intellectual Property, 2021). These adjustments are attributed to the evolution and application of educational technology, communications media, and computer programs for administering university duties (Statement of Policy in Regard to Intellectual Property, 2021). Moreover, there is the ongoing affirmation that common good results from research-driven discoveries and products, but the practice also creates a complex set of circumstances for fulfilling university obligations and distributing equitable rewards between university, innovators, and industry sponsors (Rooksby, 2016). Further complicating the innovative process and intellectual property policy development is the consideration of federal policies, legislation, and funding (Rooksby, 2016). Harvard's IP Policy now covers inventions and patents; copyrights; computer software; unpatented materials; royalty sharing; IP committee and changes to policy; and miscellaneous matters as a preemptive attempt to ease tensions and overcome the aforementioned challenges in accordance with their commitment towards the common good (Statement of Policy in Regard to Intellectual Property, 2021).

Similarly at Yale, there is a primary mission of benefitting society through translating research into products and services (Yale Office of Cooperative Research, 2021). To better accomplish this, in 1982, the university created the Office of Cooperative Research in response to the Bayh-Dole Act of 1980 (discussed in detail later). The function of the new office was to

manage all aspects of intellectual property ownership, including the technology transfer process; research considerations; invention disclosures and assessments; patents, copyrights, and trademarks; license agreements guidance and marketing advisement; commercialization; conflict of interest navigation; revenue distribution counsel; and, funding opportunities (Yale Office of Cooperative Research, 2021). As such, it was also tasked with intellectual property policy development. Unlike at Harvard where there is one overarching IP policy parsed into pertinent sections, the structure at Yale consists of multiple individual policies pertaining to the kind of intellectual property standards about which one is inquiring. For example, there is a (a) patent policy, (b) investors distribution policy, (c) management of equity in new venture policy, (d) copyright policy, and (e) cooperative research committee policy (Yale Office of Cooperative Research, 2021). Each of these setting intellectual property ownership expectations, thus providing harmony to the hum of Yale's monetization IP machine - all to the drum beat of the common good.

Common Good in Communities

Comprising a democracy's common good are the material, cultural, or institutional elements that are provided to all community members to fulfill a communal obligation for caring for specific interests for the betterment of all (Hussain, 2018). These elements range from public parks, roadway systems, property systems, public safety protections, the judicial system, educational facilities, cultural institutions and art, history, and science museums, public transportation, civil liberty protections, clean air and water, national security, medical institutions, and technology that could enhance the lives of community members (Hussain, 2018).

With the interests of the public heralded as the purpose of intellectual property development and ownership, Harvard and Yale IP committees draft intellectual property policies to echo this. Harvard stipulates that their policy should first promote the idea that original works produced there should add meaning to the common good through dissemination (Statement of Policy in Regard to Intellectual Property, 2021). Tacked on to this sentiment is the idea that a more robust application of legal protections may be necessary so that intellectual properties can benefit society in the way the university envisions (Statement of Policy in Regard to Intellectual Property, 2021). Hedging further, Harvard relays that while their intellectual property policy should place the common good above monetary gain, they purpose to financially benefit from the property, whether it be from the innovative work itself, the faculty or student's use of the university's facilities, equipment, or support staff to create said work, or through its third-party intellectual property contractual commitments (Statement of Policy in Regard to Intellectual Property, 2021).

Yale, too, touts the common good as the centerpiece of their intellectual property ownership process. However, this lofty notion is quickly tempered with a disclaimer regarding the design of their intellectual property policy. It states that, with few exceptions, Yale will be the owner of all patentable products produced at the university (Yale Office of Cooperative Research, 2021). Before faculty employment may commence and before student grants may be applied for, Yale's patent policy will be agreed upon by show of signature (Yale Office of Cooperative Research, 2021).

Using these policies as contracts and applying the law, when necessary, enables the universities to control the direction of the property and determine the economic gain of the property, thereby directly regulating what is in the best interest for the greater community.

Therein lies the problem because two competing narratives emerge: “the public’s interest in higher education (that is, what accrues to the public from it), and the private interest individuals and entities have in intellectual property” (Rooksby, 2016, p. 8).

University Discoveries become Intellectual Capital

From 1977-2020, university-generated intellectual property continued to increase in consequence and scope. In 1974, musician, mathematician, and medical doctor Raymond Damadian, received the first patent in Magnetic Resonance Imaging (MRI) technology. By 1977, while professing at the State University of New York Downstate Medical Center, he had completed the first full body MRI Scanner (SUNY Downstate Health Sciences University, 2021).

At the University of Virginia in 1985, Robert Berne formulated Adenocard, a therapeutic treatment for cardiac arrhythmia. Once patented, he commercialized the medication and designated the university to receive a portion of his royalties to fund further cardiovascular research (McNally, 2017). To date, the University of Virginia has received over $50 million dollars from their percentage of royalties (McNally, 2017).

In 1996, Larry Page and Sergey Brin, Stanford University doctoral students, embarked on a research project that sought to improve upon internet search engines. Two years later, their work would be incorporated as “Google” with a parent company currently worth $100 billion (Neate, 2021). By 2011, Stanford made the list of the nation’s top 300 organizations who have been granted US patents (Kelly, 2013).

Another invention with economic potential was devised at Johns Hopkins University by a team of biomedical engineering students in 2014. Their life-saving creation consisted of an injectable foam designed to stop patients from hemorrhaging. This injectable foam has proven

more beneficial than traditional tourniquet or gauze techniques and has immediate application for soldiers in combat (Sneiderman, 2014).

Finally, from helpful foam to healthful apples, according to Abadi and Palmer (2020), Red Delicious apples have fallen out of favor among consumers due to their perceived bland taste and meaty texture. This preference costs apple growers in excess of $250 million a year (Abadi & Palmer, 2020). Because Washington State produces the majority of the nation's apples, the impact is felt the hardest there (Abadi & Palmer, 2020). To remedy this, Washington State University researchers have spent two decades breeding the perfect apple - the "Cosmic Crisp." To fund this new cultivar, investors spent $500 million in research and $10 million in marketing, while the university is still fending off propagators by filing lawsuits and proving patent infringements through improved cultivar DNA analysis (Abadi & Palmer, 2020; Nargi, 2020). Meanwhile, back at Harvard and Yale, inventors were pursuing their own discoveries – many of whom would be bestowed the Nobel Prize.

Harvard

During the 1970s, Harvard's Sheldon L. Glashow and Steven Weinberg explored how electromagnetism and radioactivity are two products of the same force while positing the existence of a new type of subatomic particle. Their research was awarded with the 1979 Nobel Prize in Physics (Nobel Prizes & Laureates, 2021).

Concurrently within Harvard's walls, Walter Gilbert was decoding the structure of genes to obtain critical information for cell reproduction and survival. Understanding the DNA sequence within genes is critical for determining the gene's function – a process with counseling and medical diagnoses applications and one that granted Gilbert the 1980 Nobel Prize in Chemistry (Harvard Discoveries, n.d.; Nobel Prizes and Laureates, 2021).

Still simultaneously and winning the 1980 Nobel Prize in Medicine and Physiology, was Harvard's Baruj Benacerraf for his work in detecting the genetic system culpable for allergies, immunization reactions, and transplant rejection (Nobel Prizes & Laureates, 2021). A year later at Harvard, David Hubel and Torsten Wiesel won the 1981 Nobel Prize in Medicine for their research in discovering how the brain interprets visual information (Nobel Prizes & Laureates, 2021).

By 1988, Harvard had created the world's first patented animal, a transgenic mouse, which advanced cancer research and ultimately led a Harvard team to devise a method for preventing a common blood cell cancer among young children in Africa and grew cancer research exponentially (Harvard Discoveries, n.d.). This proprietary transgenic mouse who is trademarked "OncoMouse" by Du Pont will be discussed more fully in the Economic Impact section. The following year, Harvard's Norman F. Ramsey was granted the 1989 Noble Prize in Chemistry for his investigation of energy levels in atoms, which culminated in his invention of precise atomic clocks and the hydrogen maser (Harvard Discoveries, n.d.; Nobel Prizes & Laureates, 2021).

The 1990s brought two additional Nobel Prizes in Chemistry and Medicine for Elias J. Corey's method for making a drug containing complex molecules from simple and available chemicals and for Joseph E. Murray's research to prevent organ transplant rejection, respectively (Harvard Discoveries, n.d.).

The new century at Harvard gave the world discoveries from the past. Harvard graduate and Anthropology professor Christina Warinner led an international team at the embattled biblical site of Megiddo in modern northern Israel to study the culture, trade routes, and diet of inhabitants who lived in this complex society 3,000 years ago (Siliezar, 2021). Using the ancient

teeth of 16 individuals excavated from a cemetery, DNA and plaque were analyzed in a Harvard lab to discover the food particles left behind from poor dental hygiene (Siliezar, 2021). Using paleo proteomic techniques developed in-house, Warinner not only found dietary staples such as wheat and sesame seeds, but also exotic fare such as banana, turmeric, and soybeans which established trade routes between Africa and South Asia, and East Asia earlier than once thought (Siliezar, 2021).

Elsewhere in the ancient Near East, in southern Israel, Harvard engages with the Leon Levy Expedition in Ashkelon, which uses archaeology to understand the scale and scope of the city from Bronze Age to the time of the Crusaders, establish maritime trade of seaport, and create innovative ways to share the site's history and restore cultural monuments (Mission Statement of the Leon Levy Expedition to Ashkelon, n.d.).

Lastly, going further back in the past in this new century, is the out-of-this-world work led by Harvard through a collaboration with Stony Brook University, California Institute of Technology, Brown University, and NASA. A model was created to study greenhouse gases from volcanoes and meteorites that led to a warm and wet environment potentially causing microbial life to emerge on the red planet (Burrows, 2021). Researchers believe by understanding Martian geophysical processes, its environmental fluctuations, and the impact these fluctuations had on the planet, applications could be made to other planets, such as Earth (Burrows, 2021).

Yale

During this same period, Yale was also creating innovations that would have a contributing impact on humanity. Prior to the research of Sid Altman in the 1970s-1980s, ribonucleic acid (RNA) was understood to have a limited function as an information-carrying

molecule ferrying between the genes of deoxyribonucleic acid (DNA) and ribosomes (Nobel Prizes & Laureates, 2021; Yale Discoveries, n.d.). While at Yale, Altman, discovered that RNA also acts as an enzyme which means it can be designed for use as a disease therapeutic, winning Altman the 1989 Nobel Prize in Chemistry (Nobel Prizes & Laureates, 2021; Yale Discoveries, n.d.).

Also in the 1980s, John Fenn produced electrospray ionization for use in mass spectrometry. His technique created ions by aerosolizing highly charged liquid droplets and is used for biological macromolecule analysis, giving Fenn the Nobel Prize in Chemistry in 2002 (Nobel Prizes & Laureates, 2021).

Concurrently, Yale's Bill Prusoff (working with Tai Shin Lin) formulated the first antiviral compound and breakthrough Acquired Immune Deficiency Syndrome (AIDS) therapeutic (Yale Discoveries, n.d.). This patented intellectual property produced the drug, "Zerit," which is designed to extend the lives of those afflicted with AIDS and by doing so has generated $551 million based on 76,755 prescriptions – yielding $40 million in royalties for Yale alone (Yale Discoveries, n.d.).

In the following decade, David Ward, while at Yale in the 1990s, conceived of tools and techniques needed for successfully mapping the genome, including Fluorescence In-Situ Hybridization (FISH), which is used to localize DNA sequences on chromosomes (Yale Discoveries, n.d.). Meanwhile, Yale professor of mathematics, Ronald Coifman, performed pioneering work in the mathematical field of "wavelet packets" (Yale Discoveries, n.d.). Tapping into the music of the universe - math, Coifman developed a system of patterns and structures that enabled an enormous amount of information to be compressed and restored accurately (Yale discoveries, n.d.).

Moving into the new century, in the 2000s, Yale's Mark Reed invented molecule-sized currents and Joan Steitz investigated how RNA and protein-containing particles are situated in the origin of life and basic life processes (Yale Discoveries, n.d.). At the same time, Sherman Weissman, a Yale geneticist who is known for completing the nucleic acid sequence of the SV40 genome (a polyomavirus that can affect both people and monkeys), improved upon techniques of studying gene expression with regard to human major histocompatibility complex in 2001 (Yale Discoveries, n.d.).

In 2008, Yale graduate and professor, Tso Ping Ma, performed valuable research in the engineering filed of semiconductor devices and contributed to the development of Complementary Metal-Oxide-Semiconductor (CMOS) gate dielectric technology (Yale Discoveries, n.d.). By the next year, in 2009, another Nobel Prize was awarded to Tom Steitz (husband of the above Joan Steitz) for developing the first high-resolution crystal structure of a ribosome (Yale Discoveries, n.d.). Finally, in 2020, Yale inventor, David A. Spiegel patented his small molecule-based antibody-recruiting compounds for cancer treatment, which brings the total of Yale-held intellectual property patents to a grand total of 1,358 active patents across 60 countries (Yale Office of Cooperative Research, 2021).

Economic Impact of Intellectual Capital

As indicated, not only is common good attached to intellectual property, but there is economic value, as well. Aforementioned in the "Problem Statement" of Chapter One, the commercialization of knowledge can be attributed to the neoliberal economics of the 1980s. During this time, policies promoted deregulation, free-market capitalism, and reduction of government spending through privatization and austerity (a set of political-economic policies designed to reduce government budget deficits) (Rooksby, 2016).

It is evident, though, that university intellectual properties of discoveries, innovations, and creations had long been brewing beneath the surface and the favorable economic climate of the 1980s simply punctured a hole in the surface allowing greater commercialization potential to spew out. Acting as the boring auger is what Yale considers to be a visionary piece of legislation – The University and Small Business Patent Procedures Act, known as the "The Bayh-Dole" Act of 1980 (Yale Office of Cooperative Research, 2021). In the four decades since, this monumental law has proven immensely beneficial to university innovation, society at large, and the economy primarily because it functions to justify intellectual property (Campbell, 2019; Rooksby, 2016; Yale Office of Cooperative Research, 2021). Hence, the easing of these restrictions, coupled with key legislation, escalated commercial growth within the public and private sectors – universities included – which in turn increased competition and spending between institutions (Rooksby, 2016).

From 1993-2013, Yale's president and professional economist, Richard Levin, who had analyzed the correlation between scientific research and national economics, met this economic opportunity by investing $1 billion in new facilities for science, medicine, and engineering to make Yale even more competitive (Kelly, 2013). Levin also expanded full-time faculty members (assistant, associate, and full professors) to 60 in the School of Engineering and Applied Sciences alone (Kelly, 2013). Meanwhile, the Yale Office of Cooperative Research (2021) became an intellectual property spearhead for the institution by identifying, counseling, and transitioning early-stage technologies into profitable companies.

The enormity of the economic impact of intellectual property on universities cannot be overstated; and, no analysis on the topic is complete without including what many have determined to be the most valuable piece of intellectual property ever: OncoMouse (Rooksby,

2016). OncoMouse, a product of Harvard Medical School and the University of California at San Francisco, is a transgenic mouse developed to be very susceptible to cancer and tumor growth due to a genetic modification making it a carrier of the oncogene (Rooksby, 2016). OncoMouse became the first animal to ever be patented making this decision a momentous turning point in the history of academic science and intellectual property ownership (Rookby, 2016). While the mouse held mammoth potential for cancer treatments and scientific discoveries in human health, it also raised questions how the public would benefit from Harvard, and Du Pont, holding the private rights to a living innovation (Rooksby, 2016). Du Pont, as the chosen patent license holder, was given exclusive rights to sell the mouse to other institutions for research, which enabled them to set the terms. These terms included (a) an inflated purchase price, (b) restrictions from sharing the mouse with other universities, (c) required reporting of all research findings to Du Pont, and (d) an agreement to give Du Pont "reach-through" rights on all discoveries using the mouse (Rooksby, 2016).

According to Rooksby (2016), despite the terms being unfavorable for other research universities, 100 institutions agreed because the research potential was incredibly enticing. Because Harvard and Du Pont have never revealed the nature of the royalties each entity has received from the sales of the mouse, conservative estimates easily place the value in the tens of millions (Rooksby, 2016). Other universities, seeing the potential of Du Pont's patent powerplay, began creating their own patented living innovations causing even greater competition between institutions (Rooksby, 2016). Ultimately, the OncoMouse patent expired in 2005 beginning an eight-year legal battle for Harvard and Du Pont. The details, of which, are discussed below in "Case Law."

With conditions ripe for proprietary discovery, patent applications have greatly increased, producing hundreds of millions of dollars annually. This haul is typically shared between institutions and inventors. Economist, Paula Stephan (2015), estimates that American universities earned $1.88 billion in intellectual property net royalties in the year 2007 with $650 million shared between the inventors. The results are portfolio powerhouses of inventions and patents that have culminated into engines driving regional economic development and comprising a larger aggregate of assets making Harvard and Yale the universities with the two largest endowments in the world - $40 billion and $30 billion respectively (Kowarski, 2020; Yale Office of Cooperative Research, 2021).

Legislation

As innovations evolve, so does legislation. Laws emerging during this modern period provided further protection for American intellectual property. As discussed, one went a step further. The Bayh-Dole Act justified intellectual property ownership. The succeeding three laws further clarify the Copyright Law and Patent Law.

The Bayh-Dole Act (Patent and Trademark Law Amendments Act) of 1980

The Bayh-Dole Act and similar legislation in foreign countries are attributed to the overall rise in patent applications (Fisch et al., 2015; Mirshmsi & Farzi, 2018). Signed into law by President Jimmy Carter, and known by the names of its sponsors, the Bayh-Dole Act is an amendment to the Patent and Trademark Act officially entitled The University and Small Business Patent Act, which increased patent applications in the United States (Link & Van Hasselt, 2019). The purpose of the amendment was to promote and support federally funded research under the provision that there is a disclosure between the faculty and university regarding the invention and its intended owner (Link & Van Hasselt, 2019). Essentially, the

Bayh-Dole Act provided justification for intellectual property by allowing broad intellectual property claims founded on its requirements (Campbell, 2019; Rooksby, 2016). For developing countries like Iran, the need for legislation like the Bayh-Dole Act was recognized and used to model their own intellectual property laws as they pertain to research that is publicly funded (Mirshmsi & Farzi, 2018). Mirshmsi and Farzi (2018) maintained that research, and its subsequent creations, are the foundations of development in all countries. However, learning how to manage intellectual property is vital for turning intellectual property products into economic profits that can benefit society (Mirshmsi & Farzi, 2018). The Bayh-Dole Act gives society this potential through the capability of transferring technology to the private sector through Technology Transfer Offices (TTOs), thereby creating a commercialization potential and generating revenue (Link & Van Hasselt, 2019).

Digital Performance Right in Sound Recordings Act (DPRA) of 1995

The Digital performance Right in Sound Recordings Act (DPRA) of 1995 is a copyright law that demonstrates Congress' first attempt to address advances in digital communication technologies. Up until this point, copyright holders were not given exclusive performance rights to perform their works by way of digital audio transmission. Therefore, Congress sought counsel from the Copyright Office regarding whether this unprotected intellectual property should gain federal statutory protection. The recommendation was to rectify the issue by granting the emerging technology its own protection in the form of a specific piece of legislation. The result was the DPRA, which gives exclusive performance rights to copyright holders to perform their works via digital audio transmission when the work is performed in public. Traditional radio analog transmissions are not covered; however, digital radio transmission, digital cable transmission, and music services are protected by the DPRA.

Leahy-Smith America Invents Act of 2011

In 2011, the most recent and significant change occurred to the patent system since 1952. The Leahy-Smith America Invents Act shifted the nation from a "first to invent" process to a "first inventor to file" thereby dispelling with the problematic interference proceedings, or priority contests, between multiple patent applications. Of all countries with a patent system, the United States was the last to adopt a "first inventor to file" process.

Copyright Act - Title 17 of the United States Code (2016)

Title 17 of the Copyright Act outlines major revisions through a series of amendments. Among numerous other protections, this latest rendition allows for involuntary transfer of copyright under bankruptcy law; contains provisions for semiconductor chips to be included as intellectual property; rights for visual artists; establishes the National Film Registry under the National Film Preservation Act, includes criminal penalties for copyright infringement, reformations for royalties, provisions relating to copyright use for distance learning, expansions for copyrighted reproductions to make works more accessible for people with all kinds of abilities, copyright exceptions for home viewers who choose to skip credits of movies, satellite television provisions, and copyright extensions for the duration of an individual's life plus 70 years beyond death (Title 17 of the United States Code, 2016).

Case Law

With the potential commercialization and control attached to innovations, conflicts occasionally arise. Coupled with opaque intellectual property policies that may not be nuanced enough to cover every area or circumstance, litigation has become the transparent solution for enforcing intellectual property laws.

Harvard Legal Disputes

President and Fellows of Harvard College v. Harvard Bioscience, Incorporated (2002). A medical apparatus manufacturing company had been operating on Harvard's campus since the business' inception by a Harvard professor in 1901. However, in 1907, Harvard asked the business to move off campus. After they moved nearby, the company continued its research and manufacturing business under the name of "Harvard Apparatus" (President and Fellows of Harvard College v. Harvard Bioscience, Incorporated, 2002). For nearly 90 years, business continued as usual. In 1996, there was a change in ownership. The new owners kept the name and added another: "Harvard Bioscience." Then, they infused the word "Harvard" with a crimson red color and styled it in a block font (President and Fellows of Harvard College v. Harvard Bioscience, Incorporated, 2002). These two changes were grounds for Harvard to sue them for trademark infringement and state law violations (President and Fellows of Harvard College v. Harvard Bioscience, Incorporated, 2002). By this time, the new owners had moved the company to Dover 15 miles away. The company moved for partial summary judgment on Harvard Apparatus only (President and Fellows of Harvard College v. Harvard Bioscience, Incorporated, 2002).

The Court ruled that Harvard's near 100-year delay in objecting to the business' use of the word Harvard that it helped found was too long to consider a laches defense (an unreasonable delay in pursuing a claim) (Black, 2016; President and Fellows of Harvard College v. Harvard Bioscience, Incorporated, 2002). The name of "Harvard Bioscience" was voluntarily dropped.

Invitrogen Corporation v. President and Fellows of Harvard College (2008). Invitrogen and Harvard had both been researching molecular cloning and expression of mutant DNA polymerases. Ultimately, both organizations filed patent applications with the USPTO for

exclusive ownership rights of essentially the same invention (Invitrogen Corporation v. President and Fellows of Harvard College, 2008). This caused the USPTO to declare an interference and placed Harvard as the Senior Party and Invitrogen as the Junior Party (Invitrogen Corporation v. President and Fellows of Harvard College, 2008). The party designation is determined by first filing date of the application. Harvard's first application regarding the patent was about one year before Invitrogen. This left the Junior Party with the burden of having to prove that they had priority of invention before Harvard's first application date (Invitrogen Corporation v. President and Fellows of Harvard College, 2008). Invitrogen failed to do so and the patent was awarded to Harvard. The result was a complaint filed by Invitrogen to remedy the USPTO's decision (Invitrogen Corporation v. President and Fellows of Harvard College, 2008). Again, Invitrogen could not prove two critical dates of invention as required by the Court. Harvard moved for summary judgment, which was allowed (Invitrogen Corporation v. President and Fellows of Harvard College, 2008).

President and Fellows of Harvard College v. Rea (2013). This case surrounds the 2005 expiration of a 1988 patent protecting the technology produced by Harvard in partnership with E. I. Du Pont De Nemours and Company for transgenic non-human mammals (OncoMouse). Harvard had wanted to file a Parent Patent in conjunction with their initial Grandfather Patent. However, specific claims were rejected in the Parent Patent as these were already covered by the Grandfather Parent (President and Fellows of Harvard College v. Rea, 2013). So, Harvard filed a terminal disclaimer in response to the rejection which ultimately set the patent to expire 17 years later (President and Fellows of Harvard College v. Rea, 2013). In 2010, Harvard argued specific claims should not have been rejected and submitted amendments to be reexamined (President and Fellows of Harvard College v. Rea, 2013). The USPTO

rejected the amendments and declared the patent expired (President and Fellows of Harvard College v. Rea, 2013). Harvard then asked for summary judgment so that there could be an expedited resolution and no trial. The acting director of the USPTO, Teresa Rea, also asked for a summary judgment. The Court found Rea/ USPTO to be entitled to summary judgement and Harvard's motion for summary judgment was denied (President and Fellows of Harvard College v. Rea, 2013).

President and Fellows of Harvard College v. Lee (2014). Once again, the USPTO was granted summary judgment instead of Harvard in this appellate case. Because of the Court's decision in President and Fellows of Harvard College v. Rea (2013) as discussed above, Harvard appealed. However, the appellate court affirmed the district's court decision (President and Fellows of Harvard College v. Lee, 2014).

President and Fellows of Harvard College v. Certplex, Limited (2015). Harvard filed this complaint against Certplex (based in England) alleging copyright infringement when the defendants illegally accessed, copied, and distributed copyrighted material to compile study guides for MBA students. Harvard alleged that the material must have been obtained in an unethical manner since it was not readily available for public viewing (President and Fellows of Harvard College v. Certplex, Limited, 2015). The Court determined that Harvard could not prove a devious technique was used to access the material, therefore they moved to dismiss the claim (President and Fellows of Harvard College v. Certplex, Limited, 2015).

President and Fellows of Harvard College v. Elmore (2016). This case involved the curator, Steve Elmore, of the Peabody Museum in nearby Peabody, Massachusetts. Harvard filed a motion to dismiss the counterclaims of Elmore regarding his being hired to produce and publish a book on one of Harvard's collections at the museum. However, once Harvard

reviewed his manuscript, it was declined. Therefore, Elmore decided to publish his manuscript independently. After doing so, he was sued by Harvard for copyright infringement, breach of contract, and false designation of origin (President and Fellows of Harvard College v. Elmore, 2015). To which, Elmore filed a counterclaim requesting declaratory judgment and alleging breach of contract, breach of covenant of good faith and fair dealing, tortious interference with contractual relations, tortious interference with prospective contractual relations, conversion, misappropriation of intellectual property, prima facie tort, unjust enrichment, and punitive damages (President and Fellows of Harvard College v. Elmore, 2016). Harvard made a motion to dismiss all claims except one – declaratory judgment (President and Fellows of Harvard College v. Elmore, 2016). The Court dismissed Elmore's counterclaims in part as they relate to a contract to hire another author, tortious interference with prospective contractual relations, misappropriation of intellectual property, prima facie tort, unjust enrichment, and punitive damages relating to these claims (President and Fellows of Harvard College v. Elmore, 2016). The Court denied the breach of contract, breach of implied covenant of good faith and fair dealing, tortious interference with prospective contractual relations, and conversion (President and Fellows of Harvard College v. Elmore, 2016).

SiOnyx, LLC and President and Fellows of Harvard College v. Hamamatsu Photonics K.K. (2019). Harvard professor Eric Mazur invented a process to create black silicon by irradiating a silicon plane with ultra-short laser pulses (SiOnyx, LLC and President and Fellows of Harvard College v. Hamamatsu Photonics K.K., 2019). The process turns the silicon black and creates a surface texture resulting in a silicon with electronic properties (SiOnyx, LLC and President and Fellows of Harvard College v. Hamamatsu Photonics K.K., 2019). Collaborating with then-graduate student, James Carey, Mazur and Carey researched its

properties and studied its possible uses. Their work resulted in several patents. Eventually, the pair founded SiOnyx to further develop and commercialize the invention through partnerships with other companies. One of these companies was Hamamatsu Photonics K.K. (HPK), which creates silicon photodetector devices. The relationship, though, produced a legal dispute. SiOnyx and Harvard claimed (a) breach of contract and unjust enrichment related to specific confidential information provided to Hamamatsu Photonics K.K. (HPK), (b) patent infringement on similar technology, and (c) correction of inventorship on specific HPK's patents which were in dispute (SiOnyx, LLC and President and Fellows of Harvard College v. Hamamatsu Photonics K.K., 2019). The Court determined that SiOnyx and Harvard's motions to compel were denied with regard to the breach of contract and the unjust enrichment claims (SiOnyx, LLC and President and Fellows of Harvard College v. Hamamatsu Photonics K.K., 2019). However, the motion to compel was granted in part as to the patent infringement claim (SiOnyx, LLC and President and Fellows of Harvard College v. Hamamatsu Photonics K.K., 2019).

President and Fellows of Harvard College v. Halil Cil (2019). Halil Cil, a Turkish citizen, used Harvard's trademarked logo without their permission to market 30 language and private schools throughout Turkey. The Harvard logo was used on buildings, domain names and website content, educational materials, and social media accounts (Bossi & Doris, 2019). Each was an infringement on Harvard's trademark rights. The infringements were detected by the Harvard Trademark Program whose sole purpose is to identify Harvard trademark infringement issues around the world (Bossi & Doris, 2019). Because Halil Cil refused to remedy the issue once notified by Harvard Turkish attorney, Harvard sued. The objective of forcing Halil Cil to stop using the logo immediately was met and a Turkish judge awarded Harvard $14,000 (Bossi & Doris, 2019). Since then, his Turkish schools have been renamed or have gone out of business

and Halil Cil's attempts to trademark Harvard's logo in Turkey and the United Kingdom of Great Britain have been denied (Bossi & Doris, 2019). He is now facing over 500 lawsuits from various institutions over intellectual property infringements (Bossi & Doris, 2019).

Lanier v. President and Fellows of Harvard College, Harvard Board of Overseers, The Peabody Museum of Archaeology and Ethnology (2019). This sensitive case involves the descendants of an enslaved father (Renty) and daughter (Delia) whose photographs were commissioned by Harvard science professor, Louis Agassiz, in 1850 to prove the biological inferiority of Black people (Lanier v. Harvard College, et al., 2019). Neither Renty or Delia were in a position to give permission before being posed and photographed from all sides while naked. Further, they were not in a position to receive compensation for these demeaning images. After Agassiz died, the photographs were forgotten until Harvard rediscovered them in storage in 1976, at which point Harvard recognized the images as being the oldest known photographs of slaves (Lanier v. Harvard College, et al., 2019). As such, Harvard created a publication with Renty's image on the cover to sell for $40 (Lanier v. Harvard College, et al., 2019). The images are also used in PowerPoint presentations and displayed on a large screen to audiences (Lanier v. Harvard College, et al., 2019). Renty and Delia's alleged descendants (based on oral stories of ancestors with the same names and backgrounds) realized their relatives were once again being exploited for profit and sued (Lanier v. Harvard College, et al., 2019). The family, led by Tamara Lanier, are suing for compensation for pain and suffering, punitive damages, and to own the intellectual property rights of the photos and to own the physical photographs, as well (Lanier v. Harvard College, et al., 2019). The Court dismissed the lawsuit on March 4, 2021. Lanier will file an appeal.

Yale Legal Disputes

Fenn v. Yale University (1983). Faculty researcher, John Fenn, was under the impression that because Yale University did not pursue a patent on the Mass Spectrometer he invented, Fenn could patent and license it independently. The significance of this creation caused Fenn to win the Nobel Prize for Chemistry. The intellectual property became disputed when Yale University challenged Fenn and his initial disclosure of the invention (Fenn v. Yale University, 1983). Yale University argued that had Fenn been fully transparent regarding the invention's importance, the institution would have assuredly pursued the patent on it (Fenn v. Yale University, 1983). Fenn's perception of Yale University's intellectual property policy on patentable works was that he had disclosed everything that was necessary (Fenn v. Yale University, 1983). To settle the dispute, Yale University tried to mediate the matter with Fenn. However, Fenn was not amenable to the suggestion, so the case was litigated. The court disagreed with Fenn's ownership perceptions and repeatedly ruled in favor of Yale University – despite a series of appeals by Fenn (Fenn v. Yale University, 1983). A federal judge determined Fenn had committed civil theft, breached his fiduciary duty, and unjustly profited from his work (Fenn v. Yale University, 1983). At the time of the ruling, the invention had already amassed $5,000,000 (Fenn v. Yale University, 1983). Consequently, the newly minted Nobel Laureate, Fenn, owed Yale over $1,000,000 in licensing damages, attorney's fees, and the patent rights of the invention (Fenn v. Yale University, 1983).

Yale Literary Magazine v. Yale University (1987). The use of the Yale name in the title of a literary publication is what set the initial litigation in motion. Before the trial commenced, Yale Literary Magazine had applied for the admission of an out of state attorney for representation pro hac vice (for this occasion) (Black, 2016). The application was denied

because it did not establish a good cause (Yale Literary Magazine v. Yale University, 1987). On appeal, the Court affirmed the trial court's judgment (Yale Literary Magazine v. Yale University, 1987). This particular case began at this point with a filed petition for certification to appeal an Appellate Court's judgment affirming the trial court's decision (Yale Literary Magazine v. Yale University, 1987). The appeal was granted, but only as it pertains to the issue of the magazine's wanting pro hac vice representation (Yale Literary Magazine v. Yale University, 1987). This court considered the Appellate Court's decision and concluded that denying an out of state attorney on pro hac vice status was not appealable (Yale Literary Magazine v. Yale University, 1987).

Blassingame ex rel. Blassingame v. Yale University (2004). John W. Blassingame, Jr. was the administrator of the late Professor John Blassingame's estate. The decedent was his father who was employed by Yale as a full professor until dying in 2001. While there in 1976, Professor Blassingame entered into a written contract with Yale Press to edit "The Frederick Douglass Papers" and a permission fee provision was included therein (Blassingame v. Yale University, 2004). In 1979, Blassingame agreed upon a second contract. However, interpreting the provision required legal intervention to properly determine which party was entitled to said fees. Using letters between the professor and the Association for the Study of Afro-American Life and History (ASALH) and witness testimonies, the Court believed Blassingame understood that his 50% of the permission fees would be donated to ASALH (Blassingame v. Yale University, 2004). Further, the Court found Blassingame to be a reasonable and accomplished individual (Blassingame v. Yale University, 2004). As such, if a rational person believed he was actually owed money, he would not have stayed silent for 22 years (Blassingame v. Yale University, 2004). He would have spoken up much sooner. Because he did not, this indicated

his intent to donate his portion of the royalties for 20+ years (Blassingame v. Yale University, 2004). Therefore, judgment was for Yale.

Blassingame v. Yale University (2007). Three years on, the legal dispute continued between Blassingame and Yale. The word "you" had been omitted in the contract (Blassingame v. Yale University, 2007). The Court was asked to interpret whether this was intentional or accidental (Blassingame v. Yale University, 2007). At which case, the Court decided the word "you" was left out in error and does not change the meaning of the contract or shed new light on Blassingame's intention for his portion of royalties (Blassingame v. Yale University, 2007). Therefore, judgment was for Yale once again and the case was closed.

Lawton v. Yale University (2007). Yale entered into a contract when they hired a photographer, Michael Lawton, to take pictures for use in an exhibit. The contract gave the photographer the rights for the pictures. Even so, Lawton alleged that Yale used his photographs to create a book for profit. Further, he alleged that when Yale finally returned his transparencies, many were missing. The Court granted the motion as to the claim of breach of the duty of good faith and fair dealing (Lawton v. Yale University, 2007). The Court declined to dismiss the breach of fiduciary duty claim and found that Lawson had alleged that Yale was bailee for hire because under precedent in Connecticut, bailments involve fiduciary duties (Lawton v. Yale University, 2007). Therefore, Yale's motion to strike the breach of fiduciary duty claim was denied.

Enzo Biochem Incorporated and Yale University v. Applera Corporation (2015). This appellate case came from a jury's finding that Applera directly infringed multiple claims of patent infringement that enabled scientists to detect, monitor, and localize nucleic acids and in so doing induced their customers to also infringe on the patents ultimately needed to be vacated

because the district court erred when it constructed the patent's claims. They had allowed for both direct and indirect detection of a claimed compound (Enzo Biochem Incorporated and Yale University v. Applera Corporation, 2015). This was a mistake as the proper construction of the claims showed it was a process for indirect detection of the claimed compound (Enzo Biochem Incorporated and Yale University v. Applera Corporation, 2015). Therefore, the appeals court reversed the district court's claim construction, vacated the district court's infringement finding, and remanded this case to the district court with instructions to determine, consistent with the court of appeals' opinion, as to whether the product infringed upon the nucleic acids process patent (Enzo Biochem Incorporated and Yale University v. Applera Corporation, 2015).

Notable Case Law

Other noteworthy university legal disputes provide examples of how court opinions in the midst of eased regulations promoted the income-generating potential of universities holding patents and copyrights and these institutions' willingness to litigate to contest or protect ownership (Rooksby, 2016).

Speck and Gilliland v. North Carolina Dairy Foundation, Inc., et al. (1984). After two faculty members, Nancy A. Speck and D. Gary Gilliland, created sweet acidophilus milk at North Carolina State University, their perceptions of their institution's intellectual property policy, as indicated by the lawsuit they filed, were that the institution owed them 15% of royalties on all patentable inventions. However, there was a problem. The university trademarked the invention and licensed it through the Dairy Foundation because it was not patentable. For trademarking, the university does not typically offer express contracts with faculty members. Therefore, Speck and Gilliland were essentially left out of the deal, resulting in zero dollars for their innovative work. It seems, the faculty members did not understand the

distinction between trademarkable and patentable innovations and the rules surrounding each. As North Carolina State University faculty members, they are hired as teachers and researchers. This means they are hired to invent. Unless there is a policy in place (as is the case with patents) or a specific trademark contract in place, trademarkable work is owned by the university. The court affirmed the decision in favor of the university.

University of Pennsylvania v. Kligman v. Johnson and Johnson (1990). The University of Pennsylvania sued its own faculty member, Albert Kligman, over the intellectual property ownership rights for the revolutionary discovery of Retin-A, which helps to heal damaged skin due to acne scars or wrinkles. At the time of Retin-A's development, Kligman was collaborating with Johnson and Johnson. Because this supplemental research was performed on his own time and at his own expense, Kligman perceived that the intellectual property he developed belonged to him. The University of Pennsylvania disagreed. The university cited three breaches committed by Kligman. They argued he breached (a) his employment contract, (b) the university's conflict-of-interest policy, and (c) their intellectual property policy. While the university allows faculty members to financially gain from their innovative work while at the university, there are strict procedural guidelines in place as to how to disclose private enterprise projects so that the university is given the first opportunity at the work. In this case, Kligman failed to follow policies in place. Because of this, as the marketer of Retin-A, Johnson and Johnson was also named in the suit. Ultimately, the case was settled out of court.

Board of Regents of the State of Florida, Acting by and through the University of South Florida v. Petr Taborsky (1994). This case involves an undergraduate chemistry student, Petr Taborsky, who was employed as a research assistant by the University of South

Florida. The research was sponsored by a utility company who would hold the rights to what the research yielded. The research was to develop a less expensive, and more efficient, sewage treatment system within the guidelines of a university research team. Eventually, the project closed without anything being produced. Allegedly, Taborsky asked the university research team if he could continue his work utilizing an alternate method he devised. The research team disputes that this conversation occurred. Nonetheless, from his solo research, Taborsky had an important breakthrough. Because this development occurred while researching alone, Taborsky perceived the intellectual property to belong to him; therefore, he filed for, and was awarded, a patent. Once the university learned of this, the University of South Florida prosecuted him on the criminal charge of theft. They argued he had stolen his own notebooks that contained university owned intellectual property. Becoming the first person ever imprisoned for an intellectual property crime, Taborsky spent six years in prison. A gubernatorial pardon was ultimately offered. However, it was contingent upon his giving the patent to the University of South Florida. Therefore, Taborsky rejected the pardon believing it was more important to stand on principle rather than to be free. This case illustrates the seriousness of having an accurate perception of an institution's intellectual property policy.

Shaw v. Regents of the University of California (1997). The University of California became engaged in this intellectual property lawsuit in 1997. This time, it was faculty member, Douglas V. Shaw, who sued the institution. He was hired under a 50:50 royalty share with the university. During his employment, though, the university updated their intellectual property policy as it pertains to patents by reducing faculty members' royalty shares. It went from a flat 50% share to becoming a sliding scale where faculty would receive 50% of the first $100,000, then 35% of the next $400,000, and then 20% of any net royalties after that.

The miscommunication between the university and Shaw occurred when Shaw had completed his genetic research in developing six new strawberry hybrid strains. The university applied the updated royalty share to Shaw retroactively citing that it retained the right to unilaterally change personnel policies at any point. However, it was Shaw's perception that this was in breach of the original contract he signed at the time of accepting employment with the university. Unlike the University of California's prior lawsuit, this time, there was no confidential settlement as the university felt confident in its legal standing. Lasting years, the case ultimately wound its way to the California State Supreme Court. They found that the intellectual property policy, as it pertains to patents, is an enforceable agreement. Therefore, the court found that Shaw was entitled to a flat 50% of all royalties resulting from the commercialization of the six strawberry hybrid strains.

Stanford University v. Roche Molecular Systems, Inc. (2005). Upon his employment, Mark Holodniy signed Stanford University's intellectual property policy which required faculty to assign innovations to the university. During his time at Stanford, Stanford sent him for additional training at a Roche laboratory. While at Roche, he was required to sign a non-disclosure agreement that assigned inventions stemming from his work at Roche back to Roche. Roche is a federally funded laboratory subject to the Bayh-Dole Act of 1980. Apparently, Holodniy did not perceive the two signed agreements to be in conflict with one another. He simply signed both agreements because the signatures were asked of him by both Stanford University and Roche. Using the knowledge that he learned through his research at Roche, Holodniy developed a diagnostic test to determine if a patient has Human Immunodeficiency Virus (HIV). He then proceeded to assign the patent for this test to Stanford University. Learning of the developed test, Roche then used the HIV test without license from Stanford

causing the university to sue due to infringement on the patent. The Supreme Court ultimately found for Roche citing the two contracts are both viable despite the work being federally funded by the National Institutes of Health. This created a situation where both Roche and Stanford became equal co-owners of the patents. This unanticipated outcome by Holodniy caused an enormous loss of royalties for Stanford University. To remedy future cases like this, the court recommends developing a tighter agreement for patent assignments with faculty that will expressly override prior agreements for immediate implementation.

Wisconsin Alumni Research Foundation (WARF) v. Apple, Inc. (2014). WARF, the licensing arm of the University of Wisconsin at Madison filed a complaint against Apple claiming the company had infringed upon their 1998 patent of the speedy "predictor circuit" which enables processors to perform computer program instructions. It was invented by computer science professor Gurindar Sohi and three students and commercialized by WARF. The complaint alleges that Apple used the technology in its A7, A8, and A8X processors found in the 5S, 6, and 6 Plus iPhones as well as in the tablets iPad Air and iPad mini. Apple, in response, disputed the allegations and claimed their processor worked differently than the predictor circuit patented by WARF. In 2015, a federal jury determined Apple had infringed upon the patent and awarded the university $234 million in damages. Later, a judge included an additional $272 million in supplementary damages and royalties based on Apple's continued infringement through patent's December expiration date, at which point, a judgment of $506 million was levied against Apple. The corporation, in turn, immediately appealed the decision with the U. S. Court of Appeals for the Federal Court, which is a specialized patent court. The Court determined that based on the "plain and ordinary" meaning of a patent that "no reasonable juror" could believe Apple infringed it. This interpretation met the standard to overturn a jury

ruling. With $506 million at stake, WARF filed an appealed with the Supreme Court claiming that the Federal Circuit altogether ignored the jury's patent understanding and asked them to review the lower court's decision or at least send the case back to the lower court so that it could present more compelling evidence. In response, the Supreme Court declined to review the 2018 decision and threw out the $506 million in damages owed by Apple, leaving the university one half of a billion dollars short of what they believed their innovation's patent protection was worth.

Summary

With Harvard and Yale moving into this most recent period, a culmination of events reached a crescendo, creating the most favorable conditions for intellectual property ownership in history; and, with this crescendo came discord over dominium - absolute ownership and control of property – a problem only litigation and legislation can solve. At this point in history, there is broad acceptance of the intellectual property construct that intangible property can have inherent and immense property value. However, this also creates conflicts with (a) the original missions of the institutions changing once again, (b) the balance maintained between intellectual property ownership and the common good, and (c) for whom formal intellectual property policies are protecting. Additionally, with American ideals shifting; innovations evolving; neoliberal economics producing policies promoting deregulation; free-market capitalism; government spending reduction through privatization and austerity; and, the emergence of consequential case law and legislation, university-born discoveries, innovations, and creations were granted a more opportune path forward for greater commercialization potential, requiring scrutiny of the enormous economic impact of intellectual capital. In Chapter Five, the conclusion of this historical analysis is presented.

CHAPTER FIVE: CONCLUSION

Overview

Chapter Five will commence with a summary of findings from the historical evidence that moved Harvard and Yale from former colonial seminaries to commercialized academic institutions due to their intellectual property activity. The answer to the research question (What produced intellectual property rights interests and how did these contribute to legislation and case law that moved Harvard and Yale from former colonial colleges to modern commercialized enterprises?) is discussed and followed by the study's interpretations and implications. Delimitations and limitations will then be shared; and recommendations for future research will be offered. As with the preceding chapters, the fifth one will conclude with a summary.

Summary of Findings

This historical analysis began with the comprehensive phenomenon of what produced intellectual property rights interests and how these interacted with and contributed to legislation and case law moving Harvard and Yale from former colonial colleges to modern commercialized enterprises. Using the historical record of the founding of both colleges, the adjudicated legal disputes since their inceptions, and relevant legislation, the phenomenon was examined through a legal, political, religious, and sociocultural lens. Giving context to this central phenomenon were five guiding sub-questions. The following is the resolution of each of the questions posited.

Central Research Question

The central research question that guided this historical study was: What produced intellectual property rights interests and how did these interact with, and contribute to, legislation and case law moving Harvard and Yale from former colonial colleges to modern commercialized enterprises?

Moving the colonial colleges of Harvard and Yale into the modern commercialized enterprises seen today were several factors. Before those are summarized, though, the premise of the question must be addressed. The central research question was asked under the common perception that Harvard and Yale were once simple, early Christian colleges, tasked with a lofty purpose. This perception is then contrasted with the state of Harvard and Yale today – decidedly secular and deliberately wealthy.

From a personal perspective, over the years, I have heard this premise comparing the Harvard and Yale of then with the Harvard and Yale of now from many Christian university lecterns and several Protestant church pulpits. This musing of Harvard and Yale's evolutions is presented in a way to indicate a downward spiral had occurred - to which audience heads nod knowingly as if to anticipate and affirm the speaker's conclusion that the universities simply lost their ways. This sentiment can then be used as a tale of caution that X Christian university or Y Protestant church must remain vigilant so that they do not experience a similar fate. Interestingly, some of these same Christian universities were embroiled in their own moral and legal crises while contemplating the waywardness of Harvard and Yale. Similarly, some Protestant churches, while speaking of Harvard and Yale's ceding to humanistic greed, were simultaneously preaching the prosperity gospel.

For this study, this comparative account is mentioned to give perspective on the perception of the study's premise that Harvard and Yale went from colonial Christian colleges with Christian missions to secular institutions with a combined net worth of $70 billion. However, as seen from the evidence, the story is more checkered. When the Puritans left England, their home nation was relieved. The Puritans had created their own fringe Christian sect and demonstrated little regard for English law. Bluntly, they were troublemakers. However,

while troublemakers, they were acute entrepreneurs. Unlike the illiterate, ill-experienced Pilgrims, the Puritans had a good business sense and a viable plan. The data reveals that they saw the colonization of America as a clean slate to create the world in which they wanted to live – a place where fringe beliefs could become mainstream and those beliefs could be used to justify all manner of questionable behavior toward those individuals who were deemed inferior through means of intimidation. It is also verifiable that they viewed the colonization of America as a lucrative business opportunity. It was from this opportunistic environment that Harvard and Yale emerged. Therefore, the premise that Harvard and Yale were solely quaint Christian colleges toiling to do God's work is now in question. This is an important distinction because this study reveals that an evolution did not occur, but rather a revelation. In essence, Harvard and Yale publicly became who they always were.

Regarding the summary of contributing factors that moved Harvard and Yale into commercialized enterprises, intellectual property interests stemmed from the Puritan interest in property ownership and its advantages of control. Early on, they were prepared to physically fight for, or legally fight for, what they wanted and believed to be theirs. Puritans, who were innovative thinkers by nature, understood the benefits of property ownership at the onset; and, because they dominated all leadership positions in the colony, they were able to control all early litigation and legislation – despite being under England's authority at the time. Once the American Revolution was won, independence engendered legitimacy and emboldened the idea of ownership thereby proliferating patent and copyright applications, supportive laws, and legal remedies for disputed intellectual property claims.

Sub-question one. What motivated intellectual property ownership rights interests at Harvard and Yale? Coming from the established European mindset of believing there was a

rightful and inherent connection between invention and inventor, Harvard and Yale affiliates embraced this ethos. Once it was evident that private property ownership begat controlling power over the direction and use of the innovation, interest increased. Adding to this was the rise of the supreme motivator – money. Financial gain for the inventor, the invention, and the university, along with the competitive notoriety of intellectual property ownership for the common good transformed intellectual property into intellectual capital.

Sub-question two. In what ways did these interests interact with legislation? The role of legislation as a collection of statutory laws enacted by Congress is to provide regulation and deregulation, authorization, and restrictions for specific areas. Broadly, the rise of intellectual property ownership is attributed to intellectual property protections provided by law. Narrowly, intellectual property legislation functions to limit the time and scope of intellectual property rights. Perhaps the most consequential piece of intellectual property legislation, which further catapulted Harvard and Yale intellectual property interests, was the Bayh-Dole Act, which ultimately justified intellectual property ownership. Legislation, such as this, granted innovators with predictable protections and gave them the critical confidence to continue to create and also served to address the needs of the American economy. Therefore, legislation, on its face, generated opportunities for intellectual property ownership. As innovations evolved, so did the need for evolved laws, which created an intrinsic interdependency upon one another.

Sub-question three. How did these interests contribute to case law? Judicial decisions that have become common law either through binding precedent or persuasive authority were examined to discern the ways in which adjudicated Harvard and Yale intellectual property disputes involving the institutions and/or their partnered corporations have contributed to case law. With interests driving intellectual property production in a climate ripe for intellectual

property ownership, disputes were inevitable. Complicating ownership claims were insufficient intellectual property policies that were not nuanced enough to address specific situational claims. The outcome was litigation representing professor and student innovators, the corporate bodies of the universities, and cooperate sponsors or partners. Suddenly, stakeholders were pitted against one another and at stake were the claimant's control of the common good and the financial rewards that only ownership accords. Therefore, the claimant's conflicting interests resulted in lawsuits that ultimately affected case law by expanding it, such as the notorious case of Fenn v. Yale. These cases served to set precedence for all similar cases that followed; and, for the purpose of mitigation, they have also demonstrated the need for precise contract drafting to better address the capacity of intellectual capital.

Sub-question four. To what extent did these interests incentivize Harvard and Yale? Increasingly, universities are interested in acquiring intellectual property due to the benefits of potential market value. As evident from the data, there is an ongoing enormous economic impact associated with the distinction of intellectual property ownership and its potential revenue stream and control. Hence, incentivized interests were motivated by the monetization of the intellectual property.

Sub-question five. How did these interests alter both colleges' original missions of educating clergy? In 1636, Harvard's original mission statement declared its purpose was to instill biblical principles in students so that they would have a lifelong solid foundation in Christ. By 1710, the first secular president was installed and the mission of the school was redirected. Three hundred and ten years later, Harvard's mission statement is centered on academic citizenship and leadership preparation for a better society. Likewise, Yale no longer mentions

God as a focus in its mission. Instead, the mission is targeted on the kind of leaders and citizens the institution aims to produce.

From the standpoint of this analysis, it would be unwise to assume there are no other contributing factors beyond intellectual property interests that prompted Harvard and Yale's decision to omit God from their mission statements. What is known is that their decision to be more inclusive to students who do not espouse the Christian faith was a purposeful one. As such, an argument can be made that being more inclusive is closer to the teachings of Jesus. As far as being former seminaries, both universities still have Schools of Theology for those who endeavor to follow God's calling for a ministerial impact.

Discussion of Interpretations

The findings of this study align with both empirical and theoretical literature. The interpretation of the relationship between the study's findings and empirical literature are discussed through the resolution of three areas: (a) the corroboration of previous research, (b) the extension on previous research, and (c) the original contribution this study adds to the field. Likewise, the interpretation of the relationship between the study's findings and theoretical literature is discussed through the elucidation of the theories that informed this topic.

Empirical Literature

From empirical literature, the corroborated previous research examined higher education and intellectual property from divergent perspectives. Few studies provided an in-depth analysis of how intellectual property intersects with higher education and none follows the evolution of intellectual property ownership at America's universities.

As examples, a slew of research involved intellectual property history, laws, and economics in America and elsewhere. Bugbee (1967) followed the genesis of American patent

and copyright law and Khong (2006) scrutinized the historical law and economics of the Copyright Act. Brown (1999) explored intellectual property's place in property law, while Patry (1994) considered copyright law from the perspective of legal practice. Ladas (1975) analyzed patents, trademarks, and associated rights, and Steiner (1905) focused solely on trade secrets. Additionally, a study on the economic structure of intellectual property law was conducted by Landes and Posner (2003). Bracha (2019) outlined a historical account of Anglo-American intellectual property ownership while Husovec (2016) narrowed in on intellectual property in The Netherlands and Dumay (2018) probed Australian intellectual property commercialization.

Separately, an abundance of research was conducted on various aspects of higher education. Some examples include Gutek (1995, 2011), Lucas (2006), and Bastedo et al. (2016) who were all interested in the historical rise of higher education beginning in Europe and moving to America. Toutkoushian and Paulsen (2016) examined the economic structure of, and the government involvement in, the modern university and Foster (1962) delved into the economic foundation of a single university – Harvard. Finally, there was interest in university human resources and student affairs and their organizational structure, diversity outreach and training, staffing needs, and funding (Sandeen & Barr, 2006).

From the few studies that explore the intersection of intellectual property and higher education, topics surrounded the value of faculty and their innovative works (Hentschke, 2017) and student intellectual property ownership (Saunders & Lozano, 2018). Rooksby (2014, 2016) investigated the monetization and management of intellectual property branding; and, Bloch (2012), Kelin (2011), and Nadelson (2007) tackled the challenges of student and faculty plagiarism.

This study extends upon the previous research with the original inquiry of what produced intellectual property rights interests and how these interacted with, and contributed to, legislation and case law that moved Harvard and Yale from former colonial colleges to modern commercialized enterprises. The findings were gathered from a culmination of empirical literature that was used to better understand the sociocultural context of the schools as they moved through inception to the present. This was accomplished by leaning into the research of others while exploring the physical setting, religious attitudes, social settings, education pedagogy, economic system, and political ideology through the eyes of the Puritans themselves through the use of their charters, journals, colonial writings, education materials, and legal documents (Adams, 1776; Boswell, 1774; Harvard College Laws, 1655; Massachusetts Bay Colony Charter, 1629; Massachusetts General Court, 1814; C. Mather, 1693, 1702; I. Mather, 1684, 1693; New England's First Fruits, 1643; Paine, 1776; Records of the Governor and Company of the Massachusetts Bay in New England, 1853; Sewall, 1700; Winthrop, 1630; Winthrop et al., 1696).

As the colleges matured and intellectual property interests increased, case law and legislative law grew and were added to the study to give color to the emerging context. If intellectual property reflects what a society values, then law reveals the level to which a society will go to protect it. Therefore, due to this topic and the approach, the study's findings lead to a novel contribution to the intersection of intellectual property and higher education.

Theoretical Literature

The substantial theoretical framework for this historical study informed this topic by aggregating philosophical assumptions that explained or justified intellectual property ownership (Creswell & Poth, 2018). Principles were utilized from the ethical theories of Kant (1788),

Bentham (1842), Mill (1863), Locke (1689), Hegel (1821), and Rawls (1971) and from the social theories of Bandura (1977) and Unger (1876).

Ethical theories. Informing this study was Kant's (1788) Categorical Imperative which advocated for the contemplation of the motivation for an action, rather than its consequence. Being motivated by the goals of others, rather than self, shows good will. Universities embody this theory when they declare their motivation for owning intellectual property is for the common good. Next, Bentham's (1842) Principle of Utility acknowledged Kant's (1788) theory but rejected good will as the motivator of acts and added happiness as the motivator instead. Bentham (1842) believed that natural rights do not exist and legal rights are only valid if they make an individual happy. Overlaying this theory on the intellectual property construct, some believe that rights cannot be attached to intellectual property, while others accept legal rights supporting intellectual property if the innovation has potentially positive consequences (Goldstein & Reese, 2008; Khong, 2006). Like Bentham (1842), Mill's (1863) Utilitarian Theory is founded on utility, or the principle of happiness. For Mill (1863), justice, rights, and ethics exist because they are an integral part of human happiness. Ethical conduct within a parameter of justice and rights can promote a positive climate in which to create.

Hegel (1821) and his theory, Hegelianism, describes a property's tangible existence through one of two ways. It has a connection to only one person and is irreplaceable or it is merely instrumental and can be replaceable if no harm is caused to the property's owner (Hegel, 1821). According to Hegel (1821), the right to own property is the first expression of freedom. Hegel's (1821) theory could be used to justify the right to own intellectual property. Rawls' (1971) Theory of Justice sought to maintain societal fairness by establishing equal and basic rights and freedoms and by applying economic justice for all. While a university owning

intellectual property is privatization of the property, it has a common good connotation. Conversely, if it were owned by an individual this may not be the case. Lastly, Locke's (1689) Labor Theory of Property is rooted in laws of nature, which inherently gives individuals the right to appropriate and exercise control over material resources and property (Locke, 1689). Further, since intellectual property requires physical or intellectual labor to be created, this labor justifies the creator's ownership (Locke, 1689; Merges, 2011).

Social theories. Bandura's (1977) Social Identity Theory asserted that individuals learn from one another through observation, imitation, and modeling behaviors. Because this modeling can perpetuate behavior and form a conditioned environment, an individual's social identity can influence the perceived cultural or economic value of one's intellectual property, thereby controlling its demand for ownership (Bandura, 1977). Unger's (1976) Critical Social Theory combined the rule of law with elements from Hegel's (1821) theory that reality is capable of being expressed in rational categories. Unger (1976) explored the social paradox of those who want the benefits of living in a free society but feel oppressed by the established social structures within it, thereby creating a paradox that ultimately suppresses their pursuit of freedom. Applying this theory to intellectual property innovations in higher education, inventors enjoy the freedom to create at universities, but can find the rules surrounding their creations restrictive, which could then interfere with their ability to create further.

Implications

The implications of this historical study are threefold. Empirically, and from the historic context, prior research was incomplete; and, this study endeavored to fill this gap in the literature (Hentschke, 2017; Knight & Lugg, 2017; Rooksby, 2014, 2016; Saunders & Lozano, 2018). Theoretically, this study allowed for deeper understanding of the context due to its theoretical

foundation (Bandura, 1977; Bentham, 1842; Kant, 1788; Unger, 1976). Lastly, from a practical standpoint, all higher education stakeholders are affected by their university's intellectual property decisions (Rodriguez, et al., 2014; Rooksby, 2016).

Empirical

Contributing a qualitative historical analysis that examines the historical record to ascertain how university intellectual property ownership interests began and how these contributed to, and interacted with, case law and legislation ultimately giving rise to the commercialization of collegiate-driven knowledge at the colonial colleges of Harvard and Yale has empirical implications because it fills a current gap in the literature. The study's findings present a novel contribution to the research that lies at the intersecting axis of intellectual property and higher education. The addition of this study to the literature gives contextual knowledge to this phenomenon (Creswell & Poth, 2018).

Theoretical

Principles from two prevailing theories, and their related sub-theories, functioned to navigate this research towards understanding theoretical implications (Tuchman, 2004). While Unger's (1976) Critical Social Theory provided the theoretical structure for this historical by serving as its guiding theory, the works of Kant (1788) and Bentham's (1842) Ethical Theory, as well as, Bandura's (1977) Social Identity Theory laid the theoretical foundation.

Applying these theories allowed for a deeper understanding of the research and subsequent implications. Further, in historical studies specifically, theory and context are interdependent, which results in an interpretative framework of constructed reality with implications in several areas (Gall et al., 2007; Tuchman, 2004). For this study, these implications include the ability to (a) understand the subject of the theoretical desire for

intellectual property ownership more fully, (b) create a basis for developing improved intellectual property policies based on theory, (c) develop intellectual property ownership evaluation programs if needed, and (d) devise a tool for implementing future intellectual property planning (Gall et al., 2007).

Practical

The final implication is practical. Every university stakeholder is impacted by the university's intellectual property issues and interactions - from the federal and state governments who provide funding for projects and set regulations surrounding ownership to each university's corporate body, the board of trustees. Also affected are the administration, faculty, staff, students, parents, alumni, and community members (Rodriguez, et al,, 2014; Rooksby, 2016).

When intellectual property lawsuits are won, most university stakeholders stand to benefit. The university creates another revenue stream, annual budgets are padded, employment and activities are secured, tuition is stable, and innovators hold a percentage of the profits (Hentschke, 2017; Secundo et al., 2018). However, not all intellectual property results in prosperity. When intellectual property lawsuits are lost and claims denied, a clear understanding of the practical implications of university intellectual property interests is needed. If stakeholders are unable to engage in projected perspective, which is a necessary process for predicting outcomes, the effects can leave stakeholders unprepared and even vulnerable. For the university, not only are there substantial ongoing losses stemming from not owning the intellectual property license and benefitting from royalties, but there are also litigation expenses – not just for the university's counsel, but often for the opponent's counsel, as well. Tacked onto the fees for legal representation, there are court fees. Similarly, for the innovators, the loss of royalties also means the loss of their lawsuit. For most of these individuals, paying for litigation

expenses without an intellectual property award or settlement is difficult. Finally, and perhaps most importantly, there is a community impact, as well. Ownership affects the use of the intellectual property, which may be irrevocably compromised if the intellectual property benefit is lost (Rooksby, 2016).

Delimitations and Limitations

The purpose of this historical study was to describe how university intellectual property ownership interests began and how these contributed to, and interacted with, case law and legislation eventually giving rise to the commercialization of collegiate-driven knowledge at the colonial colleges of Harvard and Yale. Theory underpinned the analysis and seminal legal cases, intellectual property legislation, and a plethora of primary and secondary sources were used to provide a foundation for an ideological and cultural study of intellectual property rights at the two institutions. The delimitations and limitations affecting this study follow.

Delimitations

There are three intentional decisions that were made to define the boundaries of this study. The first includes the determination that only two colonial colleges would be examined despite there being others. As indicated, Harvard was the first to be founded; however, between the bookends of Harvard and Yale was a second colonial college, The College of William and Mary in Virginia. This institution was eliminated for this study because (a) it does not have a shared history with either Harvard and Yale and (b) it does not have the endowment or commercialized intellectual property success of either subject institution.

The second delimitation is concerned with the remainder of the colonial colleges. These were rejected because (a) analyzing only two institutions would enable the analysis to be narrow and deep which defines qualitative research and (b) the founding dates of the other colonial

colleges are more than 100 years later than Harvard, which draws their inception too close to the American Revolution and leaves too little to investigate from the colonial period.

The final delimitation was made with regard to the kinds of intellectual property that would be examined. Universities are owners of other valuable intellectual property that was not mentioned. Both Harvard and Yale have immense collections in their fine arts museums, science and nature museums, and history and culture museums. These museums display or archive priceless original works of art, ancient artifacts, rare books (i.e., there is a Gutenberg Bible preserved at Yale), early musical instruments, and living collections. In toto, between the two universities, there are 23 museums (Museums, 2021; Museums & Galleries, 2021). Some of these intellectual property pieces have been the subject of ownership disputes and interacted with international law due to questionable provenance. Because of the extensive nature of this topic and the fact that it could comprise its own study, this kind of intellectual property was omitted. In sum, this study focused on intellectual property *developed* on campus, rather than all of the intellectual property *housed* on campus.

Limitations

There are two potential weaknesses of this historical study. The first stems from the sample used. In contrast to the delimitation reasoning outlined above, using only two universities for this analysis may limit the findings of this study.

The second limitation relates to applying modern perspectives on historical events. Undoubtedly, as a contemporary researcher, and observer of historical accounts contained within primary sources, a bias will emerge. Potentially complicating this further, is the bias that was present by the first-hand accounts from the authors themselves. When aggregating the Puritans' ideological, sociocultural, political, and religious attitudes, primary sources are a vital

component for understanding context. From this data, it is evident that Puritans were proud of the accomplishments that posterity now judges. For example, the Puritans may not have imagined a world where their behavior of establishing a college illegally, skewing biblical principles for personal gain to maintain control, mistreating Indigenous people, buying and selling Black people, and allowing superstitions to justify laws and punishments would ever be met with disapproval. Regarding these specific issues, the primary-source accounts seem nearly boastful as if future readers would find them impressive. Whether these accounts were exaggerated could affect the ideological and sociocultural background of the study, which in turn, could limit the findings.

Recommendations for Future Research

Considering the study's findings, and the delimitations and limitations placed on the study, there are three recommendations for further research. The first involves using the intellectual property discussed in the "Delimitations" section above. Because large research universities operate multiple museums containing vast collections, ownership of certain intellectual property pieces may come into question due to incomplete or forged provenances. The paths for research exploration could include (a) the interactions between American university and international law for dispute resolutions, (b) the decisions that are made as to which intellectual property is displayed for the benefit of society and which is archived, or (c) the ethics of the university's ability to properly preserve pieces contrasted with the obligation to return them to their rightful owners where they may not be cared for as well. Regardless of the path taken, historical analysis of the rise of this kind of university-held intellectual property would surely yield intriguing findings.

A second recommendation involves a phenomenological study to probe if commercializing knowledge by reaping the financial rewards from the pursuit of intellectual property ownership changes the mission of universities. For example, one could research whether the government should reclassify the taxation status of these universities from non-profit to for-profit. Currently, the non-profit status is given due to the schools fulfilling the tax requirement of being a benefit to society. However, the privatization of intellectual property ownership could be further analyzed to better understand if this benefit justifies the ownership. This kind of study could enter the intellectual property ethics debate by way of tax law.

The final recommendation is to conduct a quantitative study using the top 50 American research universities to investigate the level of intellectual property policy understanding at each school. Because faculty and students are expected to agree with, and abide by, these policies, it would be interesting to inquire, through an online survey, if participants perceive these policies to be clear, fair, and capable of mitigating disputes. The survey could also contain contextual questions that would inquire if participants have engaged in sponsored projects, secured research funding (from the government or private donors), or currently hold the license of a patent.

Summary

In sum, this historical analysis found that the production of intellectual property ownership rights that transformed Harvard and Yale's from colonial colleges to commercialized enterprises originated from the opportunistic Puritan interest in property ownership and their keen understanding of the power that ownership affords. For them, ownership was another path towards colonial dominance, which is evident from their early writings, litigation, and legislation. Once American independence was secured, legitimacy energized creativity, innovation, and the idea of ownership as seen through the copious amounts of patent and

copyright applications, legislative laws, and legal remedies for intellectual property disputes. From these, financial rewards became possible and money further motivated intellectual property interests turning intellectual property into intellectual capital. Key pieces of legislation further catapulted intellectual property ownership through the justification of it; and, case law granted intellectual property rights predictable protections, which encouraged intellectual property interests further. This culminated into a climate ripe for significant economic impact on Harvard and Yale as research institutions.

Along their intellectual property ownership journey, both institutions dropped God from their mission statements. It is not clear from this study if there is a correlation between the two. What is clear from this historical analysis is that Harvard and Yale's transition from colonial Christian college to commercialized enterprises was not due to an evolution, rather it was revelation. They simply became who they always were.

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APPENDICES

Appendix A

Exhibit A was executed by the plaintiff and signed by Dr. Clark as "Witness" on February 21, 1940. It reads in material part as follows: "In consideration of my employment by the California Institute of Technology I agree that as to my inventions ... I will not grant any licenses to make, use or sell apparatus or methods embodying any of said inventions unless such licenses are approved by the ... Institute ... The royalty on said inventions shall be paid to the ... Institute ..., unless at my option I shall request ... that up to and including forty per cent (40%) of the total royalty paid by any licensee shall be paid to me ... I agree not to grant any license or make any assignment of said inventions or patent rights thereto without the express consent of the ... Institute."

Appendix B

Exhibit B is dated March 13, 1940, and reads in material part as follows: "Agreement ... between ... 'Simmons' and 'Baldwin.' This agreement is subject to the approval of the ... 'Institute.'

"Whereas, Simmons has made certain inventions ... Baldwin is desirous of obtaining an exclusive license to make or have made for use and/or sale apparatus embodying said inventions.

"Now, Therefore, in consideration of One Dollar ($1.00) and other good and valuable consideration, receipt of which is hereby acknowledged, it is agreed as follows:

"1. Simmons hereby grants to Baldwin an exclusive license ... subject, however, to the following reservations: ... [The Institute, Simmons, and Dr. Clark are each] licensed to make and use for his own use apparatus embodying said inventions ... The sponsors of Impact Research [commercial firms which paid for the research project wherein the inventions were made] ... are licensed to make and use for their own research and testing only, apparatus embodying said inventions ... Gottfried Datwyler [who worked with Dr. Clark and plaintiff in Impact Research] may be granted a non-exclusive license for the country of Switzerland ...

"2. Baldwin agrees at its own expense and without recourse whatsoever to Simmons or to the Institute to ... prosecute an application ... for United States Letters Patent on said inventions and to pay all fees in connection therewith. Baldwin shall have full control of the prosecution of such applications. Baldwin agrees not to permit any patentable item contained in the said application ... to be lost by abandonment ...

"3. Baldwin agrees to prosecute or settle any interference or infringement matter ... without recourse to Simmons or the Institute ...

"4. Baldwin agrees to pay a royalty of five per cent ... to the Institute, unless Simmons at his option shall request ... that any portion up to and including forty per cent (40%) of said royalty shall be paid to him by Baldwin ...

"Edward E. Simmons, Jr.

"The Baldwin Locomotive Works

"By _____

Vice-President

"The granting of the foregoing license is approved by the California Institute of Technology in accordance with an agreement between Edward E. Simmons, Jr., and the California Institute of Technology dated February 21, 1940.

"California Institute of Technology

"By: A. C. Balch

Pres.

[There seems to be no evidence that Baldwin, through its officers, signed Exhibit B; this has not been mentioned by the parties to this action.]"