INTRODUCTION

The Constitution is not a very long document. Yet tucked between the folds that grant Congress the power to establish the post office[1] and to create the lower courts[2] lies 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."[3] The founding fathers anticipated, it seems, the need to protect the diverse and developing outputs of their newborn country.

The constitutional establishment of copyrights and patents in the United States has since then been supplemented by the common law establishment of trade secrets and their slightly odd cousin, trademarks.[4] Together, copyright, patent, trademark, and trade secret form the basic pillars collectively described as intellectual property (IP).[5]

Across hundreds of years, the core concepts of what we protect and why we protect it have remained relatively stable. Through tectonic technological shifts – the industrial revolution, the digital revolution, and the proliferation of the internet, smartphones, and social media – these core concepts have persisted. But artificial intelligence (AI) poses a different kind of challenge. The collection of emerging technologies and computational methods that fall under the umbrella of artificial intelligence threatens to shake the very foundations of intellectual property law and our idea of what deserves protection.

Much legal scholarship on artificial intelligence,[6] as well as political commentary[7] and even the occasional lawsuit,[8] focuses on how the modern wave of generative AI systems may, through their operations, impinge on intellectual property rights already granted to others. Primary among those concerns lies the fact that generative AI systems pull their training data from information on the internet, much of

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which may be protected by copyright and thus unlawful to reproduce without consent.[9] Other legal scholarship focuses on whether creations designed or co-designed by AI systems should themselves receive intellectual property protection – a debate that, contrary to the first concern, considers the status of AI systems as creators capable of receiving legal protection.[10] Yet another set of legal scholarship on AI considers safety and ethical concerns, often calling for, or conceptualizing methods of, regulating AI.[11] Despite this range of scholarly discussion, one issue remains largely unexamined: As AI continues to embed itself throughout society, it will progressively break loose the foundations of what we choose to protect with intellectual property, forcing us to reconsider how intellectual property derives its value.

Using the language of the Constitution, our implicit image of the "progress" we hope to "promote," and the standards we use to assess the value of *human* contributions to that progress, are quietly at risk from the accelerating development of AI technology. In particular, AI has the potential to significantly shrink the pool of invention, expression, secrets, or reputation – that is, the areas covered by the intellectual property umbrella. In addition, AI may narrow the protectible space available to human contributors. Moreover, AI has the potential to shrink the value proposition of the intellectual property regimes themselves, by shaking society's faith in the purpose and effectiveness of these legal systems.

The changes wrought by AI create existential questions for society's conception of human invention. The term "existential" is used here, not in the modern sense of threatening something's existence, but rather in the broad sense of philosophical existentialism, as being concerned with exploring the meaning and value of existence.[12] In this case, the concern is the purpose and value of intellectual property, along with its implications for the value of human invention.

As we face this changing landscape, we cannot behave like the proverbial saboteurs, throwing our "sabots" into the machinery in hopes of stopping its gears.[13] The march of technology rarely retreats, and it is in our interest to adapt. We also must be careful to distinguish our fears about AI's possible threats to society[14] from the task of defining the boundaries of intellectual property. The theoretical concepts underlying intellectual property aren't designed to bear such

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weighty burdens, and the legal doctrines of IP, for the most part, have avoided taking on the heavy mantle of morality in the United States.[15] Instead, society has crafted other forms of regulation – including labor laws to protect workers during the industrial revolution,[16] criminal codes outlawing the possession of burglar's tools,[17] and regulation of federal funding for gene-editing research on humans[18] – to address broader moral and ethical concerns arising from technological changes.

In addition, we should be wary of our all-too-human instinct to insist on the primacy of our own, individual contributions to innovation. Measuring human value by our individual or collective contributions to intellectual property is a mistake. After all, technological advancement is a *product* of human innovation. The artificial intelligence systems humans create may, in some circumstances, be able to produce new creations and inventions better than our own, with the result that intellectual property systems eventually may regard many human contributions as insufficient for recognition. Nevertheless, we should not view this development as self-diminishing any more than when our offspring display greater talents than our own. Yes, their talents may make ours pale by comparison, but they couldn't have existed without us.

Perhaps in that evolved context, we might do well to remember the words of English theologian Robert South that "if there be any truer measure of a man than by what he does, it must be by what he gives."[19] In other words, what we choose to protect must be bounded by the value of the contribution it represents. As AI forces us to recalibrate our conception of what counts as an extraordinary contribution, the outer bounds of protectability will also need to be recalibrated.

Change, however, is not necessarily bad – and many have argued that the United States' intellectual property regimes are overdue for an overhaul.[20] The reach of intellectual property law has expanded dramatically over the past several decades, and this expansion has drawn its fair share of criticism.[21] In the end, AI may operate as a counterbalance, by helping to pare back some aspects of intellectual property law, as well as providing an opportunity for us to plumb the legal and philosophical depths of intellectual property protection in the context of modern innovation.

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One can predict much wailing and gnashing of teeth as we step into this next iteration of human-technological interaction. Nevertheless, we should borrow a concept from both existential philosophers and their arch opponents, theologians, to note that the enterprise we are embarking on demands a little humility.[22] The ground beneath us will be unsettled for quite some time, and there is much we don't, and can't, understand yet.

This book proceeds in four parts. In Part I, I offer an overview of modern artificial intelligence systems and technology – what AI is, how it has developed, how it works, and the nature of some ethical concerns with the technology. I also introduce the four primary intellectual property regimes: patent, copyright, trademark, and trade secrets. I begin by anchoring these regimes in the dual (and dueling) philosophies of utilitarianism and nonconsequentialism, along with their legal origins in US law. This background will be essential for understanding arguments made about IP and AI as the book progresses.

Part II surveys some of the current discussions regarding AI and intellectual property – with a special focus on the open and pressing question of whether large language models, by their very existence, commit mass copyright infringement. I also touch on some of the challenges AI poses to authorship (for copyright) and inventorship (for patent). I examine how AI intersects with the IP-adjacent right of publicity – and AI's disturbing ability to imitate the voices and appearance of real people through "deepfakes." In Part III, I describe how AI is set to shrink not only the *pool of materials* eligible for intellectual property protection but also the *value* of intellectual property regimes as we know them.

Fortunately, adapting to the impending changes facing intellectual property does not require a wholesale reimagining of the field. Rather, we can understand pathways forward through the allegory of the diamond, which this book introduces and discusses in Part IV. With that image as the model, I describe how the legal system can trim what is classed as protectible, casting the net only around the remarkable and thereby preserving value.[23] Further, the legal system could restore confidence in both AI and IP through the establishment of a public–private certification body. I conclude that, together, these approaches

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would mitigate the problems looming ahead for the four intellectual property regimes.

The speed of development in AI poses challenges for any author, and I approach the writing of this book with a bit of trepidation. Technical explanations may have changed by the time a reader reaches a particular page, pending legal cases may have advanced, and new cases may be brewing. To the best of my ability, I have tried to anticipate and leave room for advancements that may occur, despite the profound unpredictability of the field. With that caveat in mind, I turn to the enterprise at hand.

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