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## Can Game Theory Provide Justification of Intellectual Property Laws?

### Part I

Adam D. Moore argues that individuals have self-interest to promote intellectual property laws. He utilizes game theory to represent the decision to violate other people's intellectual creation. Specifically, the choice to violate or not violate another person's ideas can be modelled as a massively multiplayer, iterated version of the prisoner's dilemma. The prisoner's dilemma features players whose best outcomes stem from cooperation between themselves; however, to avoid the worst outcome, in which the other player 'betrays' them, players may preemptively betray their competitors. In other words, rational self-interest by the players involved will lead to less-than-ideal results. Iterated games feature multiple iterations of the same game theoretic conditions. Players may thus base their strategies on how their competitors played previously. Facing the conditions of an iterated prisoner's dilemma, players tend to get stuck at a suboptimal outcome, since they will eventually betray the other players. Moore concludes that laws against betraying other players are necessary to ensure optimal outcomes. In other words, players need to have the metacognition to recognize the limitations of their own rationality, which will drive them to the worst outcomes.

In intellectual property creation, creators face the temptation to copy or otherwise misuse the work of competitors for two reasons. First, to improve their outcomes from "okay" to "best". Second, to preemptively ensure their outcomes do not become "worst" rather than okay, since they presume their competitors think like they do. Faced with this situation, rational self-interest will drive creators to copy, leading to "okay" results,

which are socially suboptimal. In a game with one creator and consumer, the consumer has nothing to lose by copying. Rational self-interest will cause the consumer in to copy, resulting in a suboptimal outcome. Iterated games tend to result in “tit-for-tat” strategies, which eventually result in suboptimal outcomes. Here is a construction of Moore’s argument:

P1: Rational self-interest inevitably results in both creators and consumers copying each other’s work.

P2: Such ubiquitous copying is socially suboptimal, since creation and innovation are disincentivized, and therefore pursued less.

Conclusion: Intellectual property laws—including copyright, patents, and trade secrets—are ultimately good for everyone, because the inevitability of P1 results in the negative consequences of P2. As such, everyone has a self-interest in establishing IP laws, even if that self-interest, in different contexts, will lead to the results of P2.

In parallel to this main methodology, Adam D. Moore cites some economic literature to demonstrate the material benefit of intellectual property laws. He describes this evidence as “not conclusive” (860), in part because his paper is not an economics paper. Moore refers often to socially optimal results. In the cases he theorizes, this most accurately describes courses of actions that both result in innovation and this innovation benefit the public. This benefit comes from creator’s leveraging IP laws to sell their ideas, bringing them financial rewards in exchange for bettering society. Unspecified here are some ideological assumptions. Most broadly, Moore takes a positive view on innovation. One could argue innovation does not always foster socially optimal results.

However, for this paper, I do not take the position that innovation may not represent positive consequences.

## Part II

I disagree with the second premise of Moore's argument. Specifically, I want to argue that copying and other violations of intellectual property may result in socially optimal conditions. Economic data and research remain divided and inconclusive in regard to the effects of IP law violations. The socially suboptimal outcomes Moore models may not be as inevitable as he portrays them to be. Since Moore utilizes game theory to assert that a tragedy of the commons situation arises with the possibility of repeated intellectual property rights violations, all that would be needed to disprove his argument is to demonstrate that such a situation does not arise. Moore's argument depends upon an appeal to negative consequences, specifically a lack of innovation, that results from an inevitable misuse of IP. As such, his argument can be disputed simply by demonstrating situations wherein copying and related violations of IP have not weakened innovation.

Moore cites economic literature in parallel to his arguments. However, some research in this field controverts his conclusions. Lahiri and Dey find that monopolists may innovate more if their products are pirated. This incentive "arises primarily out of the manufacturer's desire to differentiate the legal product from the pirated product" (247). In other words, a creator will create more ideas with the threat of being copied in comparison to a state of protection through IP laws. Studying the impacts of research and development, Banerjee and Chatterjee write, "an increase in piracy *increases* the R&D investment of the *less* efficient firm and *decreases* that of the *more* efficient firm. In this

case, the overall probability of a successful innovation increases” (391). From the standpoint of individual firms, the possibility of copying decreases the likelihood of innovation. In aggregate, however, Banerjee and Chatterjee describe a market in which the possibility of piracy increases the odds of innovation.

If, like Moore assumes, innovation represents a positive consequence, the fact that strict enforcement of IP laws may actually decrease the chances of socially optimal outcomes throws a wrench into his argument. More accurately, my interjection here is that sometimes a lack of IP law enforcement results in better outcomes than those corresponding to stricter enforcement. Moore’s consequentialist approach depends upon a clear demonstration of the negative consequences in the absence of IP laws. By complicating his second premise, I show that Moore’s conclusion cannot be drawn.

I do not mean to imply that the economic research cited here proves that IP laws decrease innovation. Different studies reach different conclusions, and I doubt that a consensus among economists, or anybody else, on the impact of copying on innovation will develop. Instead, I want to suggest that an economy with no or little IP protection may be more innovative than an economy with stricter IP protection. In other words, the negative consequences Moore’s paper describes are not inevitable. Moreover, since these negative consequences are not inevitable, Moore’s conclusion that IP laws are necessary to prevent these negative consequences does not quite work.

To take a more game theoretic approach, imagine Batman needs access to a paper written by Robin. Batman’s university library does not have access to the journal in which Robin published his paper, but Batman locates a copy on a filesharing website. Let  $a$  be the marginal benefit gained by Batman writing something better than he otherwise

would have without access to Robin's paper. Let  $b$  be the marginal loss of Robin becoming less likely to innovate in the future because Batman violated Robin's intellectual property rights. It is not difficult to imagine a situation in which  $a > -b$  ( $b$  is negative to compare benefits with losses). For instance, Batman really needs access to Robin's paper to build on the advances Robin has generated. Robin, on the other hand, already has tenure or a job that does not pay him more for innovating. As such, his propensity to innovate in the future remains inelastic—in other words, unresponsive—to Batman's piracy. If it can be asserted that  $a > -b$  generally, then Moore's argument for IP does not quite work. More specifically, Robin is not likely to behave differently—for instance, copy Batman's, or someone else's work. Likewise, Batman is not necessarily more likely to copy someone else because he copied Robin to socially optimal results. I think this holds true, even in repeated iterations. I am more worried that Batman will continue copying in situations that do not generate socially optimal outcomes than Robin will change his propensity to innovate based on several violations of his IP rights, especially if he does not need incentive to continue to innovate.

The prisoner's dilemma does not accurately represent all human interaction in regard to idea generation. Occasionally, intellectual property copying and misuse results in a socially optimal outcome.

### Part III

One of the stronger defenses Moore can make of his paper is that game theory models human behavior. Moreover, at least some of the economic data available helps support the argument for IP laws. Moore could assert that game theory is a useful tool to think about the social mechanisms which govern how people interact. I do not know of

any economic research to back this up, but it seems unlikely that the socially optimal conditions in terms of innovation and creativity consists of absolutely no IP laws. In other words, Moore can argue quite easily that the result of an iterated prisoner's dilemma will not be the best outcome. My interjection above is merely that such a situation will not necessarily be the worst.

The strongest defense I can fathom for Moore will be establishing the negative consequences of societies with weak or no IP laws without relying so heavily on the prisoner's dilemma. In other words, more empirical evidence that iterated prisoner's dilemma games in regard to IP cause widespread copying, and this copying leads to suboptimal outcomes, would bolster Moore's argument. I am genuinely interested in empirical studies like this, since much economic research seems hyperspecific and not ambitious in terms of establishing widely applicable knowledge. Finally, maybe Moore can tweak his argument slightly. Asserting that socially suboptimal outcomes are likely may work just as well as asserting they are inevitable.

#### Part IV

My biggest motivation in writing against Moore's approach is that his use of game theory does not arrive at any conclusion that cannot be arrived at without game theory. Here is a consequentialist argument that arrives at basically the same conclusion:

P1. Some creators and innovators are more likely to create and innovate when they are provided incentives to do so.

P2. Creation and innovation have positive consequences for society, including the benefits for technological advancements and creative works.

P3. IP laws provide incentives to create and innovate.

Conclusion: The positive consequences of P2 justify the desire of P1, and P3 provides a relatively straightforward, if occasionally litigious, method to generate these positive consequences.

I do not find this argument to be perfect, and I understand Moore's interest in improving upon similar justifications of IP law. Most of my disagreements with this argument revolve around disagreements with P1. I have objected to it above: What if IP laws decrease innovation and creation, instead of increasing them? If Moore is correct—a lack of IP laws misses out on the opportunities such laws will facilitate—his argument would represent a stronger defense of IP laws than the argument I lay out here. In other words, demonstrating conclusively that societies with no, or few, IP laws are less creative and innovative than they would otherwise be would make the argument stronger. A consequentialist approach would merely need to establish that creation and innovation constitute good consequences, and argue from there.

Where does that leave my thoughts on IP laws? Since I do not find Moore's argument entirely convincing, I am stuck utilizing the argument I outlined above, or something similar, if I am making a consequentialist argument. I am inclined to prefer consequentialism over deontology for ethical arguments; however, I think that a deontic approach to IP laws works better here. Basically, I do not think establishing with certainty the differences in consequences between societies with and without IP laws is that feasible. There are benefits and drawbacks to having IP laws of varying strictness; justifying them on consequentialist ground would involve a utilitarian cost-benefit analysis, which I do not want to do.

Instead, I will try my hand at deontology. Creators have a right to control the ideas they create. I generally agree with the Lockean idea that through their hard work, people deserve the rights to both their material and immaterial creations. Again, this argument is imperfect, as some valid criticisms of natural rights to property can be applied to natural rights to intellectual property. Personality theorists argue that since ideas are extensions of the people who create them, they have a right to control how their ideas are utilized.

Both these schools of thought can lead to my deontic argument: it would be unjust if ideas are utilized against the wishes of those that created them. I find it to be unjust because it hijacks the freedom of expression. When a creator creates an idea, they understand the context under which it was created and how it should be used. This constitutes an expression of self. Taking the Lockean approach, hard work to create ideas justifies a person's right to see their ideas as an extension of themselves; the personality theorist approach would not need this extra step. To violate this expression of self is to deny that person access to oneself. One approach to this argument in formal terms:

P1. A person's ideas are equivalent to that person's mental existence.

P2. A person has the right to determine their mental existence.

Conclusion: To misuse the ideas of someone is to violate their right to an independent mental existence.

From there, an argument for IP laws is straightforward:

P1. Misusing another person's ideas is unethical, because it violates their rights and the violator would not want their rights to be violated.



P2. The temptation to misuse ideas, whether through unacknowledged influence or outright piracy, will cause people to misuse ideas.

Conclusion: Intellectual property laws are needed to protect the right of creators to control the uses of their ideas, and therefore their mental existences.

The most obvious critique of these two arguments is that they depend on another right. Specifically, P2 of the first argument asserts a right to determine one's own mental existence. In other words, this notion of a 'right' is subject to criticism. How would we know if a right is natural or not? Moreover, if there is no such thing as a natural right, how can rights be epistemologically and ontologically justified? Are rights not just the reification of certain ideologies and cultures at the expense of others?

Without getting mired into those debates, I do not think I need to assert that the right to control one's ideas and mental existence, or the right to anything else, is natural or ideologically neutral. Cultural relativism does not necessitate ethical relativism. The historical success of codified rights does seem to support the benefits of universal rights. In other words, liberal, humanist, representative democracy has, thus far, proved to maintain stability and allow individual liberty. Freedom of speech and expression is paramount to such systems of governance. The right to control your ideas is less ambitious than the right to speak freely, because the right to speak freely dictates what can be made public, whereas the right to control your ideas establishes how others use what is made public. From this perspective, the right to control your ideas is more fundamental than freedom of speech and expression.

I think controlling my own ideas is for the best. Most other people seem to agree. The Universal Declaration of Human Rights asserts, "Everyone has the right to the

protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.” What to do with this assertion? It centers IP protection as a human right but offers little guidance on how IP laws should operate. I think deontic arguments like this justify IP laws well enough. Consequentialist approaches, including game theory and economic approaches more generally, prove more useful in determining specific IP laws, their implementation, and their enforcement.

## Bibliography

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