

Kickstart My Art: Are Crowdfunding and Intellectual Property Rights Complements or Substitutes?*

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Abstract

Traditional wisdom holds that intellectual property (IP) laws are necessary to ensure that art and science are produced by solving the free rider problem of using or copying works without payment. Recently, a new method of financing goods has emerged, known as crowdfunding, where producers can solicit small individual donations from a large number of people. I construct a simple game-theoretic model in order to understand the interaction between this new method and existing methods that use IP laws. The model determines when it is efficient to rely on one method, the other, or both. I find that *all* successful institutions that promote creativity and innovation establish a patronage relationship where a patron bears the fixed costs of the creator in exchange for something of value and distinguish between “personal patrons,” and “commercial patrons.”

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1 Introduction

When one takes something from the ethereal realm of ideas and instantiates it as an invention or an artistic expression, they have to deal with the threat of copying. Economists and lawyers commonly argue that intellectual property (IP) rights laws—which establish the (temporary) exclusive right to sell an invention via a patent, or an expression via a copyright—act as the main mechanism to deter copying, allowing the original inventor or artist to recover the fixed costs of their creative investments, encouraging them to create in the first place (Arrow, 1962; Nordhaus, 1969; Besen and Raskind, 1991; Landes and Posner, 2003). In short, patents and copyrights are conceived economically and legally, as a utilitarian tradeoff between incentive and access, between providing a legal guarantee to the creator that their costs may be recovered by establishing a temporary monopoly, and the negative consequences of monopoly and “locking-up” socially productive ideas.

For all the romantic notions of artistic genius and heroic inventors, the rationale for IP has always been economic.¹ The legal authority for IP is established by Article I, Section 8, Clause 8 of the U.S. Constitution, stating “The Congress shall have 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.” Jurisprudence interprets this phrase as justifying these laws solely on the grounds of public interest, as in Justice Blackmun’s majority opinion in *Sony Corp. of America v. Universal City Studios, Inc.*, 474 U.S. 417 (1984):

[c]opyright is based on the belief that by granting authors the exclusive rights to reproduce their works, they are given an incentive to create, and that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in ‘Science and the useful Arts’...[Copyright] has never accorded the copyright owner complete control over all possible uses of his work (417,431).

Congress, in its most recent major revision of Copyright law (U.S. Copyright Act of 1976), appears to concur, as a 1969 report submitted by the House Committee on Patents declared that copyright law is “not primarily for the benefit of the author, but primarily for the benefit of the public” (Rudd, 1969, 141).

There is now potentially a new method of organizing the production of inventions and expressions, known

¹Armstrong (1990, 79), in describing a proto-copyright system in France known as the “book privilege system,” documents the arguments by Eloi d’Amerval in 1508, securing the first privilege from King Louis XII:

[I]n making and composing the which book the said petitioner has theron employed and spent a great deal of time and expended a large portion of his substance. For this reason, both to communicate the said book to those who shall desire to see it and to profit by it, and also to recover and retrieve part of what it has cost him to make it and compose it, he would gladly have the said book printed, he only and no one else, until such time as it shall please us...

as crowdfunding. Relative to IP laws, it seems to have several improvements. It might deconcentrate the creative industries and remove unnecessary monopoly power. It can bring in more revenues for artists – enabling them to form an interest group?

extending DOL to encompass more needs, perhaps lower valued needs, that would not get funded in ordinary system, or are unable to make political connections?

All institutional arrangements that try to maximize the cooperative Nash Equilibrium (where creators produce and consumers purchase) have empowered a contractual relationship between the creator and a patron, who bears the fixed cost of the creator’s efforts. The only variation of the institution has been changing who the patron is and what they expect in return. Here it makes sense to distinguish between what I shall term the “personal patron” and the “commercial patron.”

For the majority of history, patrons have historically been the consumers of the product themselves, often in the form of rich elites who commission an artistic work (often depicting themselves) or sponsor a bright young scientist in the expectation of earning greater social prestige. In some cases, they consume the product, but in other cases, they free ride off of the increase in social reputation that the work brings. In either case, these patrons are not interested in the profits generated by the artistic or scientific enterprise, only the direct utility it brings to them.

The commercial patron is a modern development, possible only under the expansion of markets and commerce that came with the Industrial revolution in Western Europe. With a larger market for art and science, creative works could generate both utility for the average person—not just the elite—and profits for the successful artist or scientist. With this larger market, and hence a wider division of labor, it became potentially profitable for firms to specialize entirely in the business of financing art and science in exchange for a stake in the profits the work generated by selling to consumers. It also became profitable for other sellers (or consumers) to acquire a copy of the work, and sell it at a lower price to outcompete the original producer. Hence, the demand for a change in property rights institutions prompted the creation of copyright and patent laws to incentivize creators to take risks, and to deter copying. This again increased the likelihood of society attaining the cooperative Nash equilibrium. While there have always been possibilities for independent artists who are financially independent to break the trend, the overwhelming majority of commercial art and science today is funded by commercial patrons (e.g. film studios, record studios, venture capitalists, etc).²

Today, with the rise of crowdfunding, there is a significant (though perhaps not dominant) return to personal patronage, albeit the “person” is a collection of *many* persons—“the crowd.” There are several

²I emphasize *commercial* art and science, since there is plenty of art and science that is sponsored by governments, universities, and private philanthropists, all of whom are acting as personal patrons (even if the “personality” is an organization). Personal patrons fund a venture in expectation of nonpecuniary benefits, whether it be personal prestige, political capital, or pure love of art and science, just not primarily to maximize *profits*.

types of crowdfunding platforms—donation-based, where people chip in money simply as charity, with no expectation of reward other than a “warm glow;” reward-based crowdfunding, where people chip in money with the prospect of either receiving the final product and/or some reward; and (as of 2014) equity-based crowdfunding, where contributors are given equity shares in the venture. As this paper is primarily focused on art and science, reward-based crowdfunding platforms (like Kickstarter and Indiegogo, the two largest) are my concern. People who contribute to crowdfunding campaigns, “backers” as they are called, are the new patrons, and they are the anticipated customers for the product being produced. Hence, while backers are not seeking profits, they are willing to fund some fraction of the fixed costs to ensure the producer is profitable, and the product gets made (and shipped, along with other rewards, to the backer).

The question remains, with multiple avenues at their disposal, what is the optimal method for an entrepreneur to choose to fund their venture? As copyright and patent still exist and are enforced (albeit imperfectly) since the development of commercial patronage, an aspiring artist or scientist can probably rest assured that they will not lose out to replication, but they still have to find someone to cover their fixed costs (assuming they have limited savings). They can through the traditional means of getting the attention of a commercial studio or venture capitalist—who often wants the intellectual property and a share of their profits, or now turn to personal patrons, “the crowd,” who ask for something different in return.

Over the summer, I researched and wrote a working paper entitled “Kickstart My Art: Is Crowdfunding a Complement or a Substitute for Intellectual Property Laws?” Traditional wisdom holds that intellectual property (IP) laws are necessary to ensure that art and science are produced by solving the free rider problem of using or copying works without payment. Recently, a new method of financing goods has emerged, known as crowdfunding, where producers can solicit small individual donations from a large number of people. I construct a simple game-theoretic model in order to understand the interaction between this new method and existing methods that use IP laws. The model determines when it is efficient to rely on one method, the other, or both. I find that *all* successful institutions that promote creativity and innovation establish a patronage relationship where a patron bears the fixed costs of the creator in exchange for something of value and distinguish between “personal patrons,” and “commercial patrons.”

Historically, patronage was a personal relationship, where a wealthy patron would sponsor an artist or scientist by bearing the fixed costs of production in exchange for a custom work or for the gain in reputation and social standing from supporting the arts. In modern commercial societies, patronage evolved into a commercial relationship with a commercial patron (e.g. a film studio or music studio) bearing the creator’s costs in exchange for a stake in the resulting profits from selling the works. In order to deter consumers or rivals from copying marketable works, patent and copyright laws were passed, and authors and scientists typically are asked to give up their rights to the commercial patrons as the dominant market players. Today,

crowdfunding allows a return to the “personal” patron, albeit distributed amongst thousands of “patrons.” This allows artists and scientists greater control over their works and rights, as crowdfunding contributors only ask for the product or some other reward in exchange for their contributions. Hence, crowdfunding is a valuable substitute for the system of commercial patrons and IP for those projects that profit-seeking commercial patrons pass over. Crowdfunding creators may still use IP laws to protect their profits, but it is far less urgent than for those who go the commercial route. Crowdfunding is unlikely to be a major concern or rival for those that have already have found commercial success.

Welfare of crowdfunding?

- Goal of intellectual property is utilitarian tradeoff between incentive and access, profitability of artists is of secondary concern
- o With crowdfunding, artist can retain full rights
- o Goal is to recover fixed costs
- * With crowdfunding, recovers fixed costs
- Can still patent/copyright with crowdfunding
- Crowdfunding extends the division of labor to those projects that would get passed over by a large profit-maximizing studio (looking only for superstars), leaves open room for non-profit, small profits, etc
- o Tournament theory: as the superstar prize grows, and as technology grows, more people enter the tournament

Two models, one where patron and consumer are the same. Another where patron and consumer are different. Patron as consumer works for elite. Also for the crowd. Otherwise, it is industrial organization of big studios as patrons being different from the crowd. Different objectives.

Better as a substitute for small scale, niche things that would not receive funding.

More like a complement (or nonexistent afterthought) for things that would receive funding and attract large studios different from consumers.

What would it take to transform it from complement to substitute replacement?

Complement: As price of normal goes up, demand for crowd goes down

Substitute: As price of normal goes up, demand for crowd goes up. Is the price of normal going up? Hard to get access? Tournament theory?

Patron is the purchaser vs. patron is an equity partner.

All institutional systems have ended up with a party other than the creator bearing the fixed cost of production.

(Tabarrok, 1998) describes an assurance contract, similar to a crowdfunding contract, but with a further incentive-aligning feature: that if the threshold is not met, and the funds are disbursed back to the would-be backers, the entrepreneur gives a refund “bonus” to each of the would-be backers. This further removes the free rider problem by making it a “win-win” for the individual backer – if they believe the project will succeed and their expected benefit from the project exceeds their contribution, they will back it, and if they believe the project will not succeed, they still benefit from contributing, since they would get their contribution

back plus the refund bonus, a net gain. Thus it is a dominant strategy for all to contribute. Tabarrok 2017.

Online crowdfunding platforms have emerged as a new method of raising funds to start or continue an economic enterprise, many of which involve the creation of intellectual property. A person can launch a campaign on a website such as Kickstarter or Indiegogo, request a certain amount of funding, and any user can contribute as much funding as they wish (often for a specific reward at different amounts). If enough funds are raised, they are disbursed to the project creator and used to create the product.

Economic and legal theory argues that “public goods” such as these—films, novels, or other expressive works—will not be adequately provided as a user can often consume these goods without paying for them once they are published. The legal rationale for intellectual property rights laws (e.g. copyright and patents) is to incentivize creators to take risks and create a new product by legally guaranteeing them the exclusive right to produce or distribute their products for a temporary period, as well as the rights to sue non-purchasers. Scholars and popular writers have written at length about the costs of burdensome IP laws, yet most view them as a “necessary evil.” However, very few have explored alternative institutions or mechanisms that provide sufficient incentives for innovators to undertake risks without recourse to strong IP laws.

Crowdfunding provides an alternative mechanism of ensuring that creators can recover their fixed costs of production by conditioning a project’s funding on its achieving a certain threshold of funds raised. It further often allows far better terms and compensation to the creator than the traditional system of fundraising and the system of patronage through movie studios, recording industries, or venture capital fundraising under IP laws. To what extent might crowdfunding serve as a complement to the traditional set of institutions, and to what extent might it be a substitute or even an improvement to them? Would legal changes that encourage (or discourage) crowdfunding lead to results that improve efficiency, consumer well-being, and profitability for the creators/artists? We have already seen recent developments that have allowed small ventures to offer equity positions in startups through crowdfunding.

I aim to write a paper that builds a theoretical model of innovation under different institutional settings to answer the above questions. I aim to uncover the relevant conditions that determine when it is efficient for a project to use crowdfunding or to use traditional methods of intellectual property and enforcement. I will then generate several testable hypotheses to explain which types of projects we tend to see funded by traditional means and by crowdfunded means, as well as the potential consequences of a change in legal rules. If possible, using data from crowdfunding websites Kickstarter and Indiegogo (the two largest), I hope to test some of these hypotheses.

A crowdfunding platform allows the entrepreneur to contract with their potential customers before costs are sunk (Strausz, 2017, 1431).

If artists care about retaining rights, controlling a larger share of their revenues (α)

2 A Simple Theory of Innovation

2.1 Static Analysis

As a baseline analysis, suppose a creator (player 1) and a consumer (player 2) play the following game. The creator chooses whether or not to produce a discrete expressive work x with fixed costs, F , that can be reproduced at constant marginal cost C .³ If the creator chooses to produce the good, they must incur the cost $-F - C$. If produced, player 2, the consumer, who values the good subjectively at V can choose to purchase the good at price P , earning $V - P$ or choose to copy it (without the creator's authorization) at a replication cost R ⁴, and earn a payoff of $V - R$.⁵ With a purchase, the creator earns $P - F - C$, but if the consumer copies, the creator loses $-F - C$. Figure 1 displays the decision tree.⁶

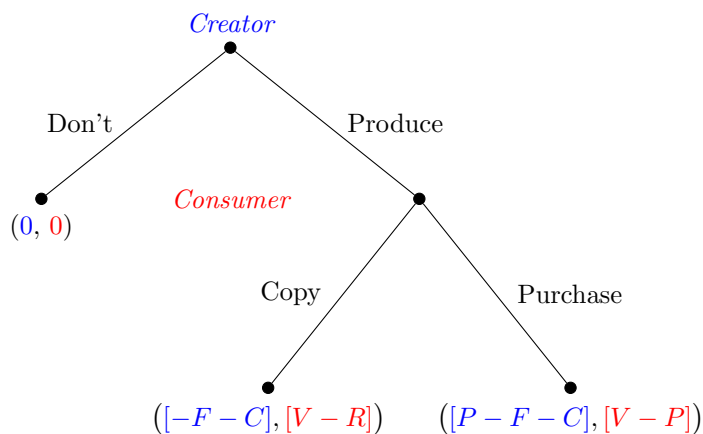


Figure 1: Simple expressive works game.

Solving via backwards induction, the consumer will purchase a produced good when

$$P < R \tag{1}$$

and copy the good otherwise, if $P > R$. If the consumer plans on purchasing, like any profit-maximizing firm, the producer will produce so long as

$$P > F + C \tag{2}$$

³We could reasonably assume that $C = 0$ for simplicity. However, to maintain generality, I maintain $C > 0$.

⁴I assume that $R > C$, since an outside individual who does not have the special knowledge that the creator must reverse-engineer the product to gain insight into replicating it (?).

⁵Here, I assume that the only alternative to purchasing the good is attempting to copy or “pirate” it. So long as V is positive, a rational consumer will choose to acquire it by some means, so long as the costs do not outweigh its value. As replication becomes prohibitively costly, this term will fall below 0. Thus, a rational individual with positive V will always purchase x so long as $V > R$.

⁶For convenience, as payoffs and even the order will change in the future, the creator's payoffs are always color-coded blue, while the consumer's payoffs are always color-coded red.

The main mechanism that leads to the Nash Equilibrium of (Produce, Purchase) is thus keeping replication costs higher than the market price. If producers or institutions can make it more costly for a consumer to copy the good, then they can ensure that all consumers with sufficient reservation prices will purchase it and earn consumer surplus of $V - P$, with profits of $P - F - C$ to the producer, and a total surplus of $V - F - C$.

2.2 *Dynamic Analysis*

If these two players interact repeatedly, even under conditions where $P > R$, there is still the possibility that we may reach the Nash Equilibrium of (Produce, Purchase). To find the minimal conditions for this possibility, consider the “grim trigger” strategy, where each player cooperates (i.e. the creator produces, the consumer purchases) but the moment their opponent defects (not producing, or copying, respectively), the player always defects in future iterations in retribution. Under these conditions, consumers will purchase only if:

$$\sum_{t=0}^{\infty} \beta^t (V - P) > V - R + \sum_{t=1}^{\infty} \beta^t 0 \quad (3)$$

where $t = 0$ is the initial period of defection, and β is the rate of discounting. As the second term on the righthand side is 0, consumers purchase so long as

$$\beta > 1 - \frac{V - P}{V - R} \quad (4)$$

Creators, in turn, will create only when:

$$\sum_{t=0}^{\infty} \beta^t (P - C - F) > P + \sum_{t=1}^{\infty} \beta^t 0 \quad (5)$$

This holds so long as

$$\beta > \frac{P}{F + C} \quad (6)$$

As this is only the “worst-case scenario,” the folk theorem in game theory has shown that there exists a wide variety of Nash equilibria (see e.g. Axelrod (1984)). Institutions thus can emerge to encourage the production and purchase of expressive works by manipulating R and/or F .

2.3 *Patronage: Consumer Bearing F*

Suppose now the patron can seek out a special type of consumer, one who is willing to bear the fixed costs up front.

The patronage system effectively added an antecedent stage to the expressive works game from Figure 1, as depicted in the updated Figure 2. In the first stage, the consumer (patron) can choose to “sponsor” the creator (client) *ex ante*, by offering to pay their fixed costs F . Following this, the game proceeds in similar fashion with the creator choosing to produce or not in the second stage, and the consumer choosing to purchase or copy in the third stage. This yields a potential new equilibrium, where the consumer could sponsor the creator, but the creator “shirks” and chooses not to produce, ripping the consumer off by running away with the consumer’s payment of F .

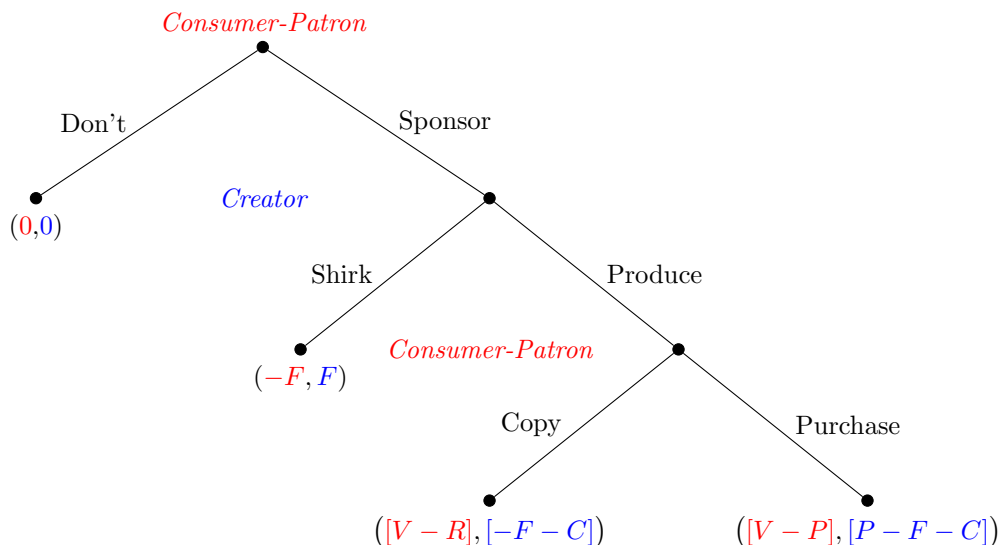


Figure 2: Patronage game: An expressive works game where the consumer has the option of “sponsoring” the creator by paying for their fixed costs *ex ante*. There is still no enforcement mechanism. Note that for consistency with the previous game, for all outcomes, I indicate the consumer’s payoff first and creator’s second.

Analyzing the game through backwards induction, the previous analysis of the baseline expressive works game holds in the final stage—consumers will purchase when $R_x > P_x$. At the second stage, however, the creator can choose to shirk and run away with the money, and would only shirk if they believed the consumer would copy the work, and if the marginal costs $C_x > 0$. This creates a potential moral hazard problem for the consumer-sponsor, risking the possibility that the creator may run with the money. Again, however, if they believe the consumer will purchase the good (which is likely unless $R_x < P_x$, it is still in creator’s interest to produce, since $P - (F + C_x) > F$ for sufficiently high P and low C_x . Lastly, in the first stage, if the consumer believes that the creator will produce and not shirk, the consumer will choose to sponsor the creator since $V_x - P_x > 0$. Thus, assuming the conditions from the original game hold, this structure facilitates cooperative production. The patronage system as an institution stewarded over the creative commons and solved the public goods problem through several mechanisms:

2.4 IP

Over the centuries, the dominant institutional innovation to manipulate R has been the creation of legal rights or privileges that discourage copying without consent of the creator, namely, patent and copyright laws. As these are private rights that the owner of a patent or copyright must exercise in court, consider the following modified form of the game:

Consumers can choose to purchase the good, but if they choose to copy the good (again at replication cost R), they run the risk (probability σ) of being liable for damages D , and thus would earn a net payoff of $V - R - \sigma D$. The creator, in turn, when a consumer copies, recovers these damages D at probability σ , but also has to incur private costs of enforcing and litigating the copyright (E), and would earn a net payoff of $\sigma D - F - C - E$.⁷ This game is represented in figure 3.

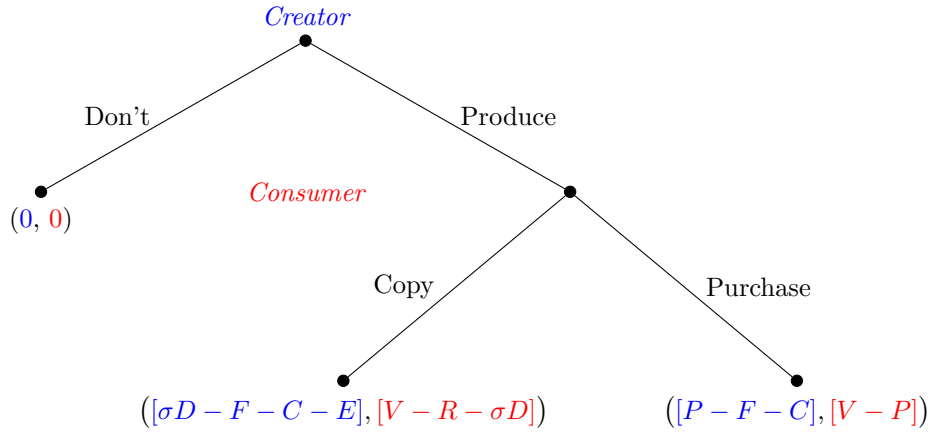


Figure 3: Simple expressive works game with a probabilistically-enforced copyright.

Under any single iteration of this game, if the creator produces, the consumer will purchase when the price is lower than the replication cost and potential apprehension cost.

$$P < R + \sigma D \quad (7)$$

Or under repeated interactions, with the threat of the creator following a trigger strategy:

$$\sum_{t=0}^{\infty} \beta^t (V - P) > (V - R - \sigma D) + \sum_{t=1}^{\infty} \beta^t 0 \quad (8)$$

This holds so long as $\beta > 1 - \frac{V-P}{V-R-\sigma D}$.

⁷I am assuming that all instances of copyright infringement are litigated by the creator. Rather than offering a third stage, where the creator could choose, in response to infringement, to litigate or to accommodate, this model is more parsimonious. Certainly, in the case of accommodating, σ would simply be 0. However, in doing so, this paper sidesteps a discussion of the strategy of whether or not to litigate infringements.

2.5 Intellectual Property Rights: Changing the Game

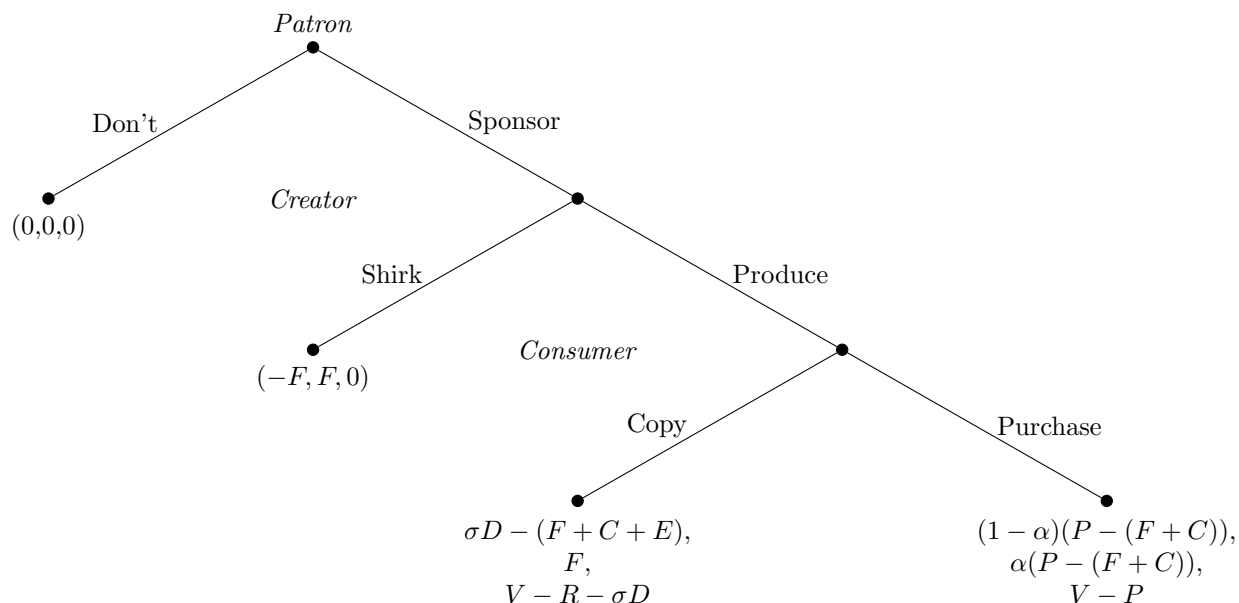


Figure 4: Patronage game with probabilistically-enforced copyright, where patron and consumer are different players. Note that the first payoff is to the patron, second to the creator, third to the consumer, in accordance with the order of their choices.

Figure 4 shows how these new dynamics update the expressive works game beyond mere patronage. The major changes in this game are the fact that the patron is different from the consumer and the distribution of the revenues between patrons and creators. The patron contracts with the creator to obtain a share of the proceeds from sales of the work, $P - (F + C)$, with the proportion α going to the creator and $(1 - \alpha)$ going to the patron. Thus, creators earn a smaller payoff than without the copyright system. Rather than the patrons purchasing the goods themselves, they are instead distributing the work of the creator to the consumer in the hopes of a financial return on a commercially successful expression (rather than pure prestige). The purchasing consumer again earns $V - P$.

In exchange for sharing revenues, the patron undertakes the cost of distributing the work so the creator does not have to, as well as acquiring the copyright and the costs associated with enforcing copyright claims. Therefore, under this arrangement, if the consumer ends up copying the work, the patron, having assumed the copyright, must incur the enforcement costs and the probability of recovering damages, $\sigma D - (F + C + E)$. The creator, however, is largely absolved of this responsibility, having already been compensated from the patron's advance for his fixed costs, earning only F . The creator (along with the patron), will of course earn no revenues from the sales of his work, and thus is comparatively worse off than the outcome where the consumer purchases. The consumer, as in the previous version of this game, earns

$V - R - \sigma D$.

Despite the added complication of three players with different interests, the dynamics of this game are again similar to both the copyright game of Figure 3 and the patronage game of Figure 2. The consumer will end up purchasing when the price is less than the replication cost plus the probable apprehension cost, $P > (R + \sigma D)$. If this condition holds, creators will produce so long as their gains under their studio deal is better than their advance $\alpha(P - (F + C)) > F$, and patrons will sponsor if both preceding conditions hold.

This new system does however introduce new problems that could ultimately threaten the level of innovation and mutually beneficial exchanges. First, copyright creates a nexus of veto points that can make production of new creative works unviable. This raises the fixed costs F to a prohibitively high level (though C is largely unchanged). Creative works still remain part of a commons, since courts are still attempting to determine which firms or individuals have copyrights over which goods and which actions infringe copyright. Many have argued that because of the excessive veto-power created by expanding the definition and duration of copyright, overlapping veto rights have created a tragedy of the “anti-commons” Heller and Eisenberg (1998); Buchanan and Yoon (2000); Heller (2008). In music, for example, if two people (say Lennon-McCartney or Simon-Garfunkel) collaborate to write a song together, one writing just the lyrics and one writing just the instrumentals, each owns a part in *both* the lyrics and the instrumentals, and neither owns the whole composition, and neither can use just the music or just the song without paying the other (Passman, 2012, Epigram).

Unlike traditional rivalrous competition and technological development which would displace existing businesses and property values, copyright legally blocks specific types of production and entry by legal fiat, not by threat of entry or being outpriced by rival competitors. Furthermore, copyright causes entrepreneurs to channel a significant portion of business expenditures (potential consumer surplus), and occasionally personal expenditures, into litigation over copyright disputes. Between 2001 and 2009, the cost of the average copyright lawsuit rose 73%, and is projected to rise 20% per year (Warren, 2009, 26).

3 Crowdfunding

In the last several years, riding the tails of microlending (Morduch, 1999) and crowdsourcing (Poetz and Schrier, 2012) developments in business, a number of platforms have emerged on the internet allowing creators to solicit small amounts of funds from vast amounts of people. Schwienbacher and Larralde (2010) define crowdfunding as “an open call, essentially through the internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes.”

As noted above, the impact and public awareness of crowdfunding is substantial, and growing. One of the most publicized instances is the Oculus Rift⁸, a virtual reality headset designed primarily for use with video games. Oculus raised \$2.4 million on its Kickstarter page⁹, despite only seeking \$250,000 as a fundraising goal. On March 25, 2014, Facebook announced that it had agreed to purchase Oculus for about \$2 billion (Kovach, 2014).

Although there has been something of a frenzy in the popular media surrounding the crowdfunding phenomenon¹⁰, as Mollick (2014) notes, there is very little academic research on crowdfunding. Several studies by business school professors explore how crowdfunding relates to theory and literatures on entrepreneurship, finance, and business management practices for startups (Schwienbacher and Larralde, 2010; Kuppuswamy and Bayus, 2014).

A few business researchers have attempted to isolate factors which predict initial success in startup projects (Greenberg et al., 2013), including using specific phrasing (Mitra and Gilbert, 2014), videos (Walker, 2011), geographic clustering (Agrawal et al., 2010), and important managerial decisions and implications for investment (Belleflamme et al., 2013). Interestingly, Mollick and Nanda (2014) find that “the crowd” largely chooses to fund similar projects as a counterfactual panel of experts. Optimistically, “the democratization of entry that is facilitated by the crowdfunding has the potential to lower the incidence of ‘false negatives,’ by allowing projects the option to receive multiple evaluations and reach out to receptive communities that may not otherwise be represented by experts” (ibid, 1).

The prime example of a crowdfunding platform is Kickstarter. With \$1,294,528,354 pledged to projects from 6,912,474 people (2,065,269 of them repeat backers), and 68,894 successfully funded projects¹¹, Kickstarter is the clear industry leader. Its biggest rival, Indiegogo, has a paltry 9.3% of their projects successfully funded, compared to Kickstarter’s 44%, (Jeffries, 2013) and Kickstarter has raised six times more money than Indiegogo (Lau, 2013). Kickstarter is an *all-or-nothing* system, which only transfers pledged money to creators if the funding goal was met within a deadline, as compared to a *keep-it-all* model, such as Indiegogo, which transfers all pledged money upon the deadline, regardless of whether the funding goal was met (Cumming et al., 2014).

On Kickstarter, project creators choose a deadline and a minimum funding goal, and create a webpage detailing their plan, how they will spend the money, and typically a video describing the project. Typically, project creators also create “funding levels” for consumers (called “backers”) to provide, e.g. \$10, \$20, \$50,

⁸Now Oculus VR, see <http://oculusvr.com>

⁹<https://www.kickstarter.com/projects/1523379957/oculus-rift-step-into-the-game>

¹⁰See e.g. http://salon.com/2011/10/05/your_favorite_author_brought_to_you_by_a_wealthy_patron, it has even earned its own South Park episode, the hallmark of popular awareness: <http://southpark.cc.com/full-episodes/s18e01-go-fund-yourself>.

¹¹These numbers were self-reported by Kickstarter as of 1 September 2014 (Kickstarter, 2014).

\$100, \$500, and \$1,000. As expected, most contributions occur at the lower levels, with a power distribution between money funded and number of people contributing at each level of funds. Each funding level usually features some “reward” or souvenir for the backer – perhaps a T-shirt, a poster, an eponymous character inserted into the plot, a first edition of the product, an autographed copy of the product, public recognition, and so on, with higher funding levels providing more rewards.¹² If the funding goal is *not* met by the deadline, *no* funds are collected, just like an assurance contract.¹³ If a project is successful, the money pledged by donors is collected using Amazon Payments, and Kickstarter takes 5% of the funds raised, with Amazon charging an additional 3–5% for use of its payment system.

Most notably as an alternative to the original patronage system and the traditional structure of industrial organization under copyright, Kickstarter claims no ownership, copyright, or patent over the projects and the work they produce. The funds to use for expenses (and revenues) flow entirely to the creator/artist (minus the 8% to Kickstarter and Amazon) who has complete creative control over the work (with the exceptions of very minor “concessions” to attract contributors (such as personalizing some element of the product to attract contributors)).

As Adam Smith reminds us, the division of labor is limited by the extent of the market. Under patronage, the extent of the market for expressive works was limited to the custom desires of the portion of elites seeking to display “magnificence.” Under copyright, the market expanded dramatically beyond just the elite, but is limited by the range of overlapping veto powers, and sometimes driven back into the hands of large publishing houses. Under crowdfunding, the market may extend to such a magnitude that it can begin to incorporate a much larger diversity of small-scale endeavors that only a handful of people have sufficient valuations for. Such projects would not be possible under an old-fashioned patronage or copyright studio-based patronage system, as the patrons target only those mass audience projects that are commercially viable. Crowdfunded projects, on the other hand, reduce this deadweight loss by enlarging the range of mutually beneficial exchanges, however small and particularized.

Crowdfunding allows coproduction of a sort between consumers and creators, a key ingredient of the Bloomington School’s recipe for successful commons-governance institutions (Aligica and Tarko, 2013).¹⁴ Coproduction allows consumers or end-users of a commons input skills or information into the production of public goods. For many public goods, the input of consumers is essential “if there [is] to be any production at all” (Parks et al., 1981, 1001-1002).

Crowdfunding combines and builds upon the original patronage system, while simultaneously existing

¹²Notably, products are actually sold to general consumers after the project is funded, and only those backers who fronted an amount of money that has a first edition of the product attached as a reward will actually receive the product.

¹³Cf. Kickstarter’s rival Indiegogo, which releases all funds raised to the creator, regardless of if the original goal is met.

¹⁴Also see Chapter 1.

within a legal framework of copyright. Thus, the analysis of crowdfunding is actually identical to that of the patronage game in Figure 2. The game could also be analyzed as patronage with copyright, as in the Figure 4 where the patron happens to be identical with the consumer.

Crowdfunding is able to elude some of the downsides of copyright (at least, crowdfunding itself does not lead to the uncooperative outcomes of copyright, but those outcomes can still exist as a result of copyright). Crowdfunding platforms generate incentives to encourage cooperative equilibria and discourage uncooperative equilibria through several mechanisms.

First, like patronage, consumers purchase the good *ex ante*. However, rather than a single person bearing the fixed costs F through paying a high price and low quantity (and the risk of the creator not following through), a diverse multitude of people bear the costs at different prices and quantities. This lowers the risk faced by each individual, incentivizing more funding to projects.

Second, like patronage, repeated interactions constrain creators from defecting and running away with promised funds. In order to avoid the principle-agent problems associated with the sucker's payoff equilibrium, backers search for projects which have a high probability of success, and a low probability of the creator simply taking the money and running (and failing to deliver rewards). Kickstarter attempts to mitigate these possibilities through several ways. In general, Kickstarter considers a project as a legally binding contract, which gives backers a standing to sue for cases of outright fraud. Unlike Indiegogo, Kickstarter also requires submissions to be screened by Kickstarter staff, and has a list of prohibited projects such as projects that make medical claims, that distribute contraband, political campaigns, or financial services¹⁵ In recent years, Kickstarter has also added a required "risks and challenges" section for creators to document their plans for coping with uncertainty in the process of production. These factors aid backers in choosing which projects to back. Mollick and Nanda (2014) notes that surprisingly, "the crowd" tends to choose projects that a panel of experts would choose, indicating that the asymmetric information problem is limited.

Third, crowdfunding platforms also keep a permanent record of projects that were funded (and not funded¹⁶) on their websites. This prevents any work from being orphaned, or any question about who currently controls the copyright of the good. This ensures that prior projects can be easily identified for creators who wish to build upon previous work, ensuring that the transaction costs of producing new creative works does not get prohibitively high enough to yield an uncooperative equilibrium where no new work gets produced.

Fourth, replication costs R are kept low to a degree through customization. Like the patronage system which featured individual patrons contracting with artists to produce a unique creative work, crowdfunding

¹⁵See <https://www.kickstarter.com/rules> and <https://www.kickstarter.com/rules/prohibited>.

¹⁶Though there has been controversy recently that Kickstarter hides failed projects. One can find a failed project by searching for it specifically by name or other identifier, but it will not show up on the general list of projects.

allows backers to select the creative work they wish to contribute to, as well as the amount of funding. In exchange, backers can get specific rewards for their contribution. In effect, this creates the possibility for price-discrimination, which is not possible for copyright and patent. By charging different prices to different consumers, creators are able to appropriate more of the social value of their creations, which has always been one of the primary problems with creative works and the key argument for copyright (Arrow, 1962; Besen and Raskind, 1991).

Finally, similar to the underlying cultural institutions that sustained the patronage system, crowdfunding draws upon a similar environment. Prive (2012) describes that the in draw of contributing to crowdfunding campaigns,

The idea of ‘its not what you do, but why you do it,’ really hits home here. By focusing on a bigger purpose, the driving force behind a brand, project creators will be able to create a unique community of likeminded individuals...There are three main reasons why people unconnected to a project or business would support it: [1] They connect to the greater purpose of the campaign, [2] They connect to a physical aspect of the campaign like the rewards, [and 3] They connect to the creative display of the campaign’s presentation

While it would be reasonable for one to *prima facie* dismiss these developments as a mere drop in the bucket compared to the oligopoly of the big publishing firms, the magnitude and effects of crowdfunding are surprising. At least 86 Kickstarter-funded films have been released in over 1,500 North American theaters in 2012, with three of them being among the 20 best-reviewed films, five films have been nominated for Oscars, and at least 16 have been picked up for national broadcast through HBO, PBS, Showtime, and other networks Strickler et al. (2013). In a highly publicized campaign, musical artist Amanda Palmer raised \$1.2 million on Kickstarter to produce a new album, art book, and concert tour.¹⁷ Her album was posted on her website ¹⁸ for free download under a Creative Commons license¹⁹. As noted above, the virtual reality headgear device, the Kickstarter-funded Oculus Rift, has been purchased by Facebook for \$1 Billion.

References

Agrawal, A., Catalini, C., and Goldfarb, A. (2010). The geography of crowdfunding. *NET Institute Working Papers*, 10-08.

¹⁷<https://www.kickstarter.com/projects/amandapalmer/amanda-palmer-the-new-record-art-book-and-tour>

¹⁸<http://amandapalmer.net/producttypes/featured/>

¹⁹<https://creativecommons.org/licenses/by-nc-sa/3.0/>

- Aligica, P. D. and Tarko, V. (2013). Co-production, polycentricity, and value heterogeneity: The ostroms' public choice institutionalism revisited. *American Political Science Review*, 107(4):726–741.
- Armstrong, E. (1990). *Before Copyright: The French Book Privilege System*. Cambridge University Press, Cambridge.
- Arrow, K. (1962). Economic welfare and the allocation of resources for invention. In UMI, editor, *The Rate and Direction of Inventive Activity: Economic and Social Factors*. Universities-National Bureau.
- Axelrod, R. (2006[1984]). *The Evolution of Cooperation*. Basic Books, USA.
- Belleflamme, P., Lambert, T., and Schwienbacher, A. (2013). Crowdfunding: Tapping the right crowd. *Journal of Business Venturing*, Forthcoming.
- Besen, S. M. and Raskind, L. J. (1991). An introduction to the law and economic of intellectual property. *The Journal of Economic Perspectives*, 6(1):3–27.
- Buchanan, J. M. and Yoon, Y. J. (2000). Symmetric tragedies: Commons and anticommons. *Journal of Law and Economics*, 43(1):1–13.
- Cumming, D. J., Leboeuf, G., and Schwienbacher, A. (2014). Crowdfunding models: Keep-it-all vs. all-or-nothing. Working Paper.
- Greenberg, M. D., Pardo, B., Hariharan, K., and Gerber, E. (2013). Crowdfunding support tools: Predicting success & failure.
- Heller, M. (2008). The gridlock economy: How too much ownership wrecks markets, stops innovation, and costs lives.
- Heller, M. A. and Eisenberg, R. S. (1998). Can patents deter innovation? the anticommons in biomedical research. *Science*, 280:698–701.
- Jeffries, A. (2013). Indie no-go: only one in ten projects gets fully funded on kickstarter's biggest rival. *The Verge*. <http://www.theverge.com/2013/8/7/4594824/less-than-10-percent-of-projects-on-indiegogo-get-fully-funded>.
- Kickstarter (2014). Kickstarter stats. <https://www.kickstarter.com/help/stats>.
- Kovach, S. (2014). Facebook buys oculus vr for \$2 billion. <http://www.businessinsider.com/facebook-to-buy-oculus-rift-for-2-billion-2014-3>.

- Kuppuswamy, V. and Bayus, B. L. (2014). Crowdfunding creative ideas: The dynamics of project backers in kickstarter.
- Landes, W. M. and Posner, R. A. (2003). *The Economic Structure of Intellectual Property Law*. Belknap Press, USA.
- Lau, J. (2013). Dollar for dollar raised, kickstarter dominates indiegogo six times over. *Medium*. <https://medium.com/@jonchiehlau/dollar-for-dollar-raised-kickstarter-dominates-indiegogo-six-times-over-2a48bc6ffd57>.
- Mitra, T. and Gilbert, E. (2014). The language that gets people to give: Phrases that predict success on kickstarter.
- Mollick, E. (2014). The dynamics of crowdfunding: An exploratory study. *The Journal of Business Ventures*, 29:1–16.
- Mollick, E. R. and Nanda, R. (2014). Wisdom or madness? comparing crowds with expert evaluation in funding the arts. *Harvard Business School Entrepreneurial Management Working Paper*, 14-116.
- Morduch, J. (1999). The microfinance promise. *Journal of Economic Literature*, 37:1569–1614.
- Nordhaus, W. (1969). *Invention, Growth and Welfare: A Theoretical Treatment of Technological Change*. MIT Press, Cambridge, MA.
- Parks, R. B., Baker, P., Kiser, C., and Oakerson, L. L. (1981). Consumers as coproducers of public services: Some economic and institutional considerations. *Policy Studies Journal*, 9:1001–11.
- Passman, D. S. (2012). *All You Need to Know About the Music Business*. Free Press, New York, 8 edition.
- Poetz, M. and Schrier, M. (2012). The value of crowdsourcing: can users really compete with professionals in generating new product ideas? *Journal of Product Innovation Management*, 29(2):245–256.
- Prive, T. (2012). What is crowdfunding and how does it benefit the economy? *Forbes*. <http://www.forbes.com/sites/tanyaprive/2012/11/27/what-is-crowdfunding-and-how-does-it-benefit-the-economy/>.
- Rudd, B. W. (1969). Notable dates in american copyright 1783-1969. <http://www.copyright.gov/history/dates.pdf>. Copyright Office.
- Schwiebacher, A. and Larralde, B. (2010). Crowdfunding of small entrepreneurial ventures. In *Handbook of Entrepreneurial Finance*. Oxford University Press. Forthcoming.

Strausz, R. (2017). A theory of crowdfunding: A mechanism design approach with demand uncertainty and moral hazard. *American Economic Review*, 107(6):1430–1476.

Strickler, Y., Dvorkin, E., and Holm, E. (2013). \$100 million pledged to independent film. <http://kickstarter.com/blog/100-million-pledged-to-independent-film>.

Tabarrok, A. (1998). The private provision of public goods via dominant assurance contracts. *Public Choice*, 96:346–362.

Walker, R. (2011). The trivialities and transcendence of kickstarter. August 5, 2011.

Warren, S. E. (2009). Controlling the costs of intellectual property litigation. <http://www.metrocorpcounsel.com/pdf/2009/December/26.pdf>.

4 Appendix

Proof for equation 3:

$$V - R - \sigma D < V - P$$

$$-R - \sigma D < -P$$

$$R + \sigma D > P$$

Proof for equation 4:

$$P - F - C > 0$$

$$P > F + C$$

Proof of equation 5:

$$\begin{aligned}
\sum_{t=0}^{\infty} \beta^t V - P &> V - R + \sum_{t=1}^{\infty} \beta^t 0 \\
\frac{V - P}{1 - \beta} &> V - R \\
V - P &> V - R(1 - \beta) \\
\frac{V - P}{V - R} &> 1 - \beta \\
\frac{V - P}{V - R} - 1 &> -\beta \\
1 - \frac{V - P}{V - R} &< \beta
\end{aligned}$$

Proof of equation 6:

$$\begin{aligned}
\sum_{t=0}^{\infty} \beta^t P - F - C &> -F - C + \sum_{t=1}^{\infty} \beta^t 0 \\
\frac{P - F - C}{1 - \beta} &> -F - C \\
P - F - C &> -F - C(1 - \beta) \\
\frac{P - F - C}{-F - C} &> 1 - \beta \\
\frac{P - F - C}{-F - C} - 1 &> -\beta \\
1 - \frac{P - F - C}{-F - C} &< \beta \\
1 - \left(1 - \frac{P}{F + C}\right) &< \beta \\
\frac{P}{F + C} &< \beta
\end{aligned}$$