GOALS
An Essay on Choosing Objectives, Encountering Prior Creators, and Pursuing Innovation

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Introduction
All histories have to pick a starting point: perhaps 1066, or 1789, or 1945, depending on the topic and the author’s desired focus. Similarly, all economic models have to pick a starting point, but they must do so in a different way. This essay is based on the premise that the economic model of sequential innovation starts in the wrong place, too late in the innovation process. I will explore the concept of reaching back further into the histories of the players in the sequential innovation game. Along the way, I will advocate for an increased concern with process and context than the economic models to date have shown.

This mention of process and context brings us to intellectual property law. Patent, copyright, trademark, and the other fields addressing the law governing intangible goods, must all address the issue of sequential innovation. To some extent, each area acknowledges the tradeoff between encouraging today’s creators and deterring tomorrow’s creators. But my working hypothesis is that better economic models could inform us about better statutory and judicial approaches to sequential innovation. In this essay, I will discuss the kinds of reforms that might become possible.

I will begin by briefly describing the current state of economic models of and legal regimes for sequential innovation. Then, I will reach back one step from where the economic models start to discuss how downstream innovators encounter the inventions, works, or other intangible goods of upstream innovators. Studying the different modes of encounter has implications for efficiency and some reflections in current law. From there, I
reach even one step further back in the innovation to discuss what seems to me like the real key: the goals and objectives that innovators have, even before they begin to encounter the existing set of intangible goods as innovators. Conceiving of goals as public goods produces a number of interesting threads to follow, many of which have relevance to intellectual property law and, more broadly, to promoting innovation.

I. Sequential Innovation in Economics and Law

All innovation is sequential, in the sense that all innovations use or build on some of the innovations that came before. Economically, this presents a fascinating problem, because pre-existing intangible goods are inputs in any production process that generates new innovations and creations. In other words, every intangible good has the potential, at least, to be an intermediate good. Moreover, in terms of industrial-organization economics, an innovator’s use of an existing intangible good suggests a possible bargain between competitors. Whether a bargain must be struck depends, of course, on whether the prior innovator has property rights in what the downstream innovator used. Some economic models take the law as a given; that is, they treat the law as exogenous. Other models make the law endogenous; for example, theories of the optimal scope of intellectual property rights. At the center of all these economic approaches to sequential innovation is a model of a two-person game featuring a prior, upstream innovator and a subsequent, downstream innovator.

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1 My intended use of the term “innovation” is extremely broad, covering any creative or inventive activity.
2 This point about the production function for creative works is what I was driving at in a previous essay. See Peter DiCola, An Economic View of Legal Restrictions on Musical Borrowing and Appropriation, in Making and Unmaking Intellectual Property (Mario Biagioli et al., eds., 2011).
3 See, e.g., Susanto Basu et al. on the (macro)economics of intermediate goods; Peter Diamond & James Mirrlees, Optimal Taxation and Public Production I, 61 AM. ECON. REV. 8 (1971) (arguing that efficiency requires no taxation of purely intermediate goods).
Intellectual property law approaches the issue of sequential innovation in its own ways. The legal determination of when the prior innovator has property rights is based in large part on the characteristics of the intangible good being used or built on. For example, some intangible goods are patentable, but some intangible goods are too abstract to patent. Of course, looking to the upstream work is not the full story. The type of use can also matter in certain circumstances in intellectual property law. One good example relates to the first factor in fair use analysis in copyright law; educational, critical, transformative, and other favored uses have a better chance, all else equal, of being fair. Still, a major question—and one that comes before the scope of rights or affirmative defenses in infringement analysis—is whether the intangible good (or portion of the good) that has been used is protected by some branch of intellectual property law. Answering this question drives a lot of the legal treatment of sequential innovation, and in turn affects the economic dynamics.

Intellectual property law puts uses of existing works into different categories. This classification depends on the ownership status of the existing work, the quantity and various qualities of what is used, and certain characteristics of the use itself. Some innovations would infringe patents, copyrights, or trademarks (or violate other rights in intangible goods, perhaps under state law) without a license. Some innovations use inventions, works, marks, or other intangible subject matter in which others hold valid rights, but avoid infringing because of a limitation or exception in intellectual property law. And some innovations use intangible subject matter whose intellectual property rights have expired.

Yet these three familiar categories—infringing uses, privileged uses, and uses of material that has passed into the public domain—do not completely cover the field of what innovators and creators use. Many previous innovations do not fall under the subject matter of any branch of

6 See 35 U.S.C. § 101; [the patentable subject matter case law].
intellectual property law and never did. Innovators and creators use language, tools, metaphors, techniques, styles, information, theories, and other abstractions that have developed over the ages and never enjoyed legal protection as intellectual property. These types of intangible goods might have been conveyed to or made available to innovators through a work protected (now or previously) by intellectual property law. But they might also have been transmitted through other forms of exchange, other social and cultural practices.8 One must recognize this fourth category of source material to describe the full universe of what today’s innovators use that came from yesterday’s innovators.

The copyright status of pre-existing intangible goods in the previous paragraph can be summarized as follows:

- Infringing uses of intangible goods, requiring a license
- Privileged uses of currently protected intangible goods, benefiting from a limitation or exception
- Uses of intangible goods that were dedicated to the public domain or passed into the public domain by law
- Uses of intangible goods that are outside the reach of intellectual property law entirely

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8 My point here is that some abstractions might be thought of as uses of the intellectual-property-protected works that happened to convey them to the downstream innovator. For instance, suppose you are a technology writer. Some copyrighted work may have provided your first exposure to the word “technology.” In that case, one could think of your subsequent use of that term as a use of an idea (not protected expression) in the copyrighted work. Thus, your use would fall into the category of privileged uses. A limitation or exception in copyright law is what allows your unauthorized use. But you might also have learned that word from your parents or your friends. In that contrary case, one could think of your subsequent use of the term “technology” as a use completely outside the reach of intellectual property law. It would owe nothing to the idea/expression dichotomy.
The second, third, and fourth categories all make up the public domain. The reason to differentiate them is that each category presents a distinct kind of uncertainty to the downstream innovator. Attempting to make a privileged use may carry uncertainty about the legal doctrine that creates the relevant limitation or exception. Using a public domain invention or work may come with uncertainty about that status. Asserting that an intangible good is simply outside the reach of intellectual property law also leaves uncertainty, in that case about the doctrines that define the boundaries of the various branches of intellectual property law. Despite these various types of uncertainty, this legal framework ideally signals to innovators which pre-existing works must be licensed and which can be used freely.

Thus far, this is familiar territory for economics and for intellectual property law. The economic models are focused on bargaining over outcomes—whether the downstream creator can license the upstream creator’s work to make a new product. A key parameter of this bargaining process is the legal status of the thing being used. Sorting out the legal status of a use of an intangible good is a core function of the statutes, case law, and agency regulations that make up intellectual property law. These doctrines are mainly concerned with the outcome of sequential innovation—the end result of a downstream creator using something the upstream creator made. Intellectual property law sometimes hints at a concern for process, that is, how the use of an existing invention or work came to pass. (I will say more about that below.) But for the most part, the way that downstream creators come across and come to use the work of upstream creators has not been a

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9 Cf. Jessica Litman, The Public Domain (1990) (defining the public domain to be more broad than just works whose copyrights have expired).

10 Most economic models do not address the situation in which the downstream creator invests in research, legal advice, or both to determine whether the upstream work even needs to be licensed in the first place. Instead, the focus is on licensing’s relationship to the decision to invest in a new product or technology.
focus in intellectual property law. In the next section, I offer a framework for such an inquiry.

II. Encounters Between Upstream and Downstream Innovators

Most discussion of the economics or law of sequential innovation focuses on conflicts that have already emerged between upstream and downstream creators. In the economic models, for example, the upstream and downstream creators are isolated from the rest of the economy—a fated dyad that must bargain toward a license, contest each other in a lawsuit, or walk away from the opportunity. The models begin at a juncture in history when the downstream creator has already discovered the upstream invention or work that they may wish to use. But what happened before that point in time? How did the downstream creator encounter the upstream invention or work?

Part of my theory of sequential innovation is to develop a taxonomy of the ways in which downstream creators come across the existing source material they want to use. This is the first step in terms of reaching back to before conflict over the use of intangible goods emerges. The ways that downstream creators might encounter upstream inventions or works have two key dimensions: what I will call the modality of the encounter, and what I will refer to as the project stage of the encounter. I will start by describing the four modalities.

One modality is when the downstream creator is engaged in a purposeful search for source material. In many innovation processes, the downstream creator is applying effort to look for something to build on or build with. For example, an inventor may expend effort to search for existing technologies that solve a particular problem he faces along the way toward an eventual invention. For another example, a musician may expend effort to find a replacement for a digital sample for which permission has been denied. Putting effort into search has economic implications because search takes time and money. Therefore, search for source material becomes part of the upfront investment in creating new intangible goods. Legally, however,
any effort put into search seldom has relevance. Infringement analysis
focuses on the end result.

Some encounters with upstream inventions and works, however, occur with minimal or no search effort. We might refer to this modality as involving serendipity. Think of a chance encounter, where a novelist happens upon a news article that inspires a new plot point. One could also think of a scientist makes a theoretical breakthrough by seeing a metaphor in a painting. The economics of serendipity are less obvious than those of costly search effort. But we can think of the economics of being ready for serendipitous encounters to occur. Legally, serendipity is no excuse for infringement; again, the modality of the encounter currently has no relevance in intellectual property terms.

Another modality involves accidental or subconscious encounters. Suppose that a work has been absorbed at some point in an inventor or creator’s life. Perhaps an inventor read about an earlier technology in a class, or perhaps a musician heard a song on the radio as a teenager. Later, the technology or the song may find its way into the inventor’s or the musician’s own work. This modality of encounter is distinct from purposeful search effort and even from serendipity, because it is subconscious. The economics of accidental copying are also distinct—and non-standard, because the downstream creator is not making a choice.\(^\text{11}\) This presents a\footnote{In other words, decision theory doesn’t seem particularly relevant, because the economic actor is not aware of any decision being made.} In intellectual property law, we generally do not recognize subconscious copying as an excuse. In copyright, proving access is enough in cases of subconscious copying;\footnote{See ABKCO v. Harrisongs.} in patent, we similarly think of infringement as a strict liability tort.\footnote{See, e.g., Robert Merges, \textit{A Few Kind Words for Absolute Infringement Liability} (working paper 2014).}

The final modality I have identified occurs when the upstream owner (who may or may not be the creator) actually invites the downstream creator
to make use of the invention or work. Rather than engaging in search, experiencing serendipity, or accidentally incorporating the earlier work, the downstream creator here has been solicited. The economics of this kind of encounter are completely turned around; the upstream owner is making a decision to market the work to a potential creator of a follow-on innovation. Legally, an invited use would of course be treated differently, because it would involve permission or a license.

To some extent, one can organize the modalities I have identified along a kind of mental state spectrum, ranging from negligent to intentional (or knowing) to purposeful to consented. But this is just one way to think about it. The key is that the process of the downstream creator coming across the upstream creator’s work differs between each modality.

Modalities are just one dimension of the encounter. The other dimension I think is important to characterizing the process of downstream creators encountering existing material is what I call the project stage.

Some encounters occur at the very beginning of a project—coming across the prior work is the very thing that launches the downstream creator’s entire project. For example, a photographer might start her project with the intention of shooting pictures of the same subject as a prior photographer, but with her own perspective and framing. For another, a semiconductor manufacturer might start a project with the intention of building on the current, industry-standard chip. Economically, considering the use of an existing intangible good at this early stage of a project has important implications. Many costs will not yet be sunk. Legally, using a prior work from an early stage may count against a defendant in an

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14 And it is not a perfect fit—both the search-effort mode and the serendipity modes are intentional; drawing a distinction between purposeful (for encounters where search effort is made) intentional/knowing
15 See Green and Scotchmer (1995) for an explanation of the importance of sunk costs in sequential-innovation interactions.
infringement suit. On the other hand, because many parodies fall into this category, encountering the prior work at an early project stage does not always count against the downstream creators.

Other uses of existing inventions and works occur at a middle stage in the innovation process. In these settings, the downstream creator has a project going already, and the upstream intangible good fits into that project somehow. Economically, some of the costs of creation are already sunk, possibly presenting difficulties in terms of dividing the profit between the upstream and downstream owners of intellectual property. In terms of legal implications, middle-stage borrowing or appropriation of earlier works does not seem to have salience.

Late-stage sequential innovation is distinct from the early- and middle-stage varieties. One example that came to mind was the use of an existing mark, or aspects of marks, when a new product is close to being marketed and the branding decisions are made. On the other hand, branding decisions could certainly be made much earlier in the going, alongside the research and development of other product characteristics. In any event, it is quite possible that a downstream innovator could encounter an upstream work late in a project’s life, perhaps incorporating it as a useful reference, allusion, or citation. Economically, this could make the stakes lower for the downstream creator, as the project was close to fruition even without the prior work. But legally, using something at a late stage would not seem to make much difference in an infringement analysis.

Finally, some uses of existing inventions, works, and other intangible goods are at the level of tools or building blocks—they become methods of combining other elements. For example, notions of how to construct a

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16 See Steinberg v. Columbia Pictures, 663 F. Supp. 706 (S.D.N.Y. 1987) (finding infringement where the defendant’s work was composed with the plaintiff’s work in mind from the beginning).
mainstream movie plot operate as tools for downstream script writers.\textsuperscript{17} These uses occur throughout a project; it is hard to pin down the uses as pertaining to just the beginning, middle, or end.

With just these two dimensions, modality and project stage, we have sixteen possible combinations—sixteen different types of encounters.

\textbf{Table 1: Encounters}

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<th>Encounters</th>
<th>Modality</th>
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<td>Search Effort</td>
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<td>Project Stage</td>
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Of course, other taxonomies are possible, and some will contest my choice of where to cut a messy and complicated reality into categories. My point is that the economics of each type of encounter are somewhat (or even significantly) different. Meanwhile, current law takes some of these dimensions into account but not others. By identifying these many different types of encounters, I mean to pose the question whether the law should be more systematic about how it thinks about the process of sequential innovation, rather than just the end result. Moreover, breaking down the many types of encounters is just one necessary step in a broader process of deconstructing what happens before a sequential-innovation conflict. We can look back even further, before the encounter between upstream and downstream even happens.

\textsuperscript{17} This is the subject of many books for would-be script authors. [Cite examples.]
III. Goals

The analysis of innovation by economists and lawyers has lacked ambition. By that statement I mean no insult to the ingenuity and hard work of previous scholars. Rather I mean that their analysis has failed to include a satisfactory account of innovators’ aspirations, objectives, missions—in short, goals. With a better theory of goals, I will argue, we can have a fuller conception of sequential innovation economics. In turn, we might use such a theory to develop better ways to address sequential innovation in intellectual property law.

My definition of a goal, for purposes of this essay, is a desire to engage in research toward creating or discovering an intangible or tangible good that people can use. Goals are themselves a subclass of intangible goods that cover aspirations—things that do not exist in the word yet. Goals can be abstract or specific. Instead, goals are defined along the time dimension: a goal is a target, once it is reached by an individual or firm, I would no longer consider it a goal—at least for that individual or firm.

In my terminology, goals can be differentiated from ideas, which are inherent in things that do already exist. A goal based on an intangible good would be “build a theoretical model of how air moves around an airplane wing.” A goal based on a tangible good, for example, would be “produce an airplane.” The restriction that goals must pertain to goods that people can use is important. Both my examples satisfy this requirement. People can use a model of air flow to develop further theories or to develop product. And people can use airplanes for travel, transport, and other purposes.

Other desires that we would colloquially understand as goals are outside the scope of my definition. Some goals are about financial rewards or other measurements of the physical world, rather than what happens in the

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18 Other choices about terminology are possible; for instance, one could make “ideas” the superset and renaming the class of intangibles that are not expression nor applied technology nor distinct marks] Yet another choice would be to refer to the superset of goals, ideas, and technology as “information.”
physical world itself. Goals like “become rich and famous” relate to social
status, but they do not have a useful good as their end product. Other
eamples include, “we want to make the most revenue in this industry” or
“fifty percent of Americans will have iPhones.” This type of success-
measurement is not what I’m talking about, even though I recognize that it is
a very familiar colloquial usage. Achieving these goals does not result in a
new tangible or intangible good that people can use.

Research and development (“R&D”) generally starts with a goal in
mind, even though researchers often change or refine their goals during the
research process and serendipity often leads to creations and discoveries
that the researcher did not seek. Thus, the initial choice of goal precedes any
R&D activity. My starting place is that choosing a goal is a strategic decision
that merits economic investigation. Contrary to existing models of
innovation, which usually take goals as given (if they mention them at all),
the model that I outline in this section focuses on them. Modeling goal space
was inspired by Professor Suzanne Scotchmer’s work on innovation,
particularly her discussion of prizes.19 In models of prizes, the government or
a private entity sets a goal, hopefully a worthy one. To my mind, it is worth
modeling and singling out goals as a particular class of intangible good to
apply across all contexts of innovation.

The contentious policy debate about the merits of patents as opposed
to prizes illustrates the importance of analyzing how goals function in the
innovation process. Many economists and historians of science have noticed
that contests start with a public or private entity setting a research goal. But
the literature on prizes, contests, and rewards is seldom, if ever, careful to
distinguish goals from ideas.20 Contests—situations with ex ante rewards—
require that a goal be specified in sufficient detail. But they do not require the

19 SUZANNE SCOTCHMER, INNOVATION AND INCENTIVES (2006); see also [many of
Scotchmer’s articles].
20 I think of a goal as being a research objective for a tangible or intangible
good that does not yet exist. An idea, by contrast, is an abstract concept that
inheres in a tangible or intangible good that has already been created.
government to specify the ideas that will eventually make up the invention that satisfies the goal. Specifying the goal does not necessarily require specifying the approach.²¹

Consider a standard model of patent races. The focus of the patent-race literature is the quest to avoid duplicated, perhaps wasted, effort. Under some conditions, the promise of patent rewards can exacerbate the problem of wasted effort. In these models of patent races, firm 1 is endowed with one idea and firm 2 is endowed with a second idea. There is no explanation for the endowment; in other words, there is no model of the idea-generation process. What is less apparent is that there is no model of the goal-setting process, either. Goals are not mentioned at all, whereas ideas are, so it’s easier to forget that a goal-setting process and its result have been assumed.

Without a picture of firms’ goals, we are misled about firms’ outside options to the patent race. Outside options play a huge role in game theory. For example, the outside option largely determines the predicted result of bargaining: a party with a good outside option will get more of the surplus than a party with a bad one. Firm 1 and Firm 2 might have competing ideas; that is, they may have competing ways of satisfying a particular goal. But they might also have different sets of goals that it is possible for them to pursue. Take one example, where both firms are stuck with a particular goal and have no other options. If that is the case, then reducing patent rewards won’t succeed in avoiding duplicated effort. But this is hard to see if we completely ignore goals and the context in which they are set. Now consider a second familiar IP story that we tell. In Landes and Posner’s well-known model of copyright economics, a key set of players is the group of copyists waiting in the wings.²² The threat from copyists, more precisely the threat of a creator’s profits eroding to zero, is nicely illustrated by their model. I doubt neither

²¹ Some discussions of contests, prizes, and rewards overstate the informational requirements of implementing a prize system. [Cite examples.]
²² WILLIAM LANDES & RICHARD POSNER, THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW (2003). This is of course, just one prominent example of an economic model that relies on a story about copyists being at the ready.
the accuracy of their model under its assumptions nor its usefulness in providing certain insights. Rather, I suspect that there are additional and fundamental dynamics between creators and copyists that have not been captured by Landes and Posner or subsequent scholars. My root question is: where did those copyists come from? And my working hypothesis is that the first step in becoming a copyist is setting as a goal the creation of the copy.

I suspect that decision-making about goals is the key to understanding when, where, and how many copyists will emerge with respect to a particular invention or expressive work. If a good working model of the goal-setting process—or competition among firms in “goal space,” if you like—could be developed, it would tell us how many copyists to expect under certain conditions. Some inventions might face many copyists, but others might face few. This matters hugely for intellectual property law. If copyists loom large and stand at the ready, then the justification for intellectual property is possible. In the absence of any threat from copyists, however, intellectual property will most likely lack any economic justification.

It might seem like you could keep going earlier and earlier in the innovation process: forming of the firm, choosing career, developing skills, and so on. So goals might seem like an arbitrary starting point. But my intention is not just to play a game of picking ever-earlier steps in the process. Goals are interesting because they are intangible goods that can be shared, just like ideas, technologies, and expression. And they are under-theorized in economics and IP law.

In the remainder of this section, I describe some legal and economic aspects of goals, under my definition of the term. I offer a model of how goals fit into the innovation process. I also offer some preliminary thoughts about the many policies and legal regimes that affect the way firms and individuals may use goals in their work. Participants in innovation policy, while sometimes handling goals in a sensible way, might sometimes be asking the wrong questions. Perhaps policy makers are not looking at all the relevant evidence and are missing opportunities to better promote innovation.
Goals are public-good inputs in the innovation process. Innovation happens in a sequence of events—probably a different sequence every time, but a sequence nonetheless. This allows one to think of innovation as a process with certain steps. But this abstraction, to be useful as a model, should come with the qualifications that the order of steps may vary and that certain steps may be skipped. My contention is that choosing a goal is one of those possible steps. A creator or inventor might well start with an objective in mind (though this is not required for creation or discovery to occur). And this merits investigation. What occurs at this stage of the innovation process? Where do creators’ and inventors’ preferences come from? What resources are available to them at the goal-setting stage? What constraints do they face?

One could model the choice of goal as a constrained optimization problem: firms maximize profits and individuals maximize utility, subject to budget constraints, and markets clear. But this mathematically convenient approach would leave out some of the psychological, personal, and organizational richness of goal-setting. Let it suffice for now to make some general statements about preferences that can be refined later. Creators and inventors are likely to have heterogeneous and idiosyncratic preferences over goals. Part of the variation in preferences comes from differences in the physical, financial, and human capital available to different firms and individuals. Ultimately, the choice of a goal for research, development, invention, or creativity will reflect the ultimate motivations of economic actors. Those higher motivations could be profit, utility, happiness, virtue, something else, or some complex combination of all these. The key is that goals are chosen.

By addressing goal-setting first, I do not mean to suggest that goals come first in time. The choice of goal occurs in an institutional environment. For example, it probably matters whether it is a tenured engineering

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23 This would be the traditional technique in microeconomics.
professor or a corporate middle manager making the choice. The individual (or individuals within a firm) who choose goals come to that choice with particular training, motivations, and institutional imperatives. The engineering professor might be focused on her field’s standards for academic publication in setting her research goals, while the manager at a firm in industry might be focused on the ability to develop new products eventually as she chooses goals. In their respective endeavors, their colleagues, professional networks, funding or fundraising process, and information-technology support, among other things, could shape the research goals they choose to pursue.

When a potential creator or inventor chooses a goal, where do the options come from? Goals can be brand new; that is one possibility. Someone was the first person to aim at concocting a pharmaceutical remedy for headaches, or writing a poem in sonnet form, or making a computing processor from silicon. But complete novelty of goal is a rarity. In my conception of the innovation process, creators and inventors draw from the pool of pre-existing goals that are accessible to them, whether to borrow or to build on. For example, once the microprocessor existed, one of the next goals that some firms and individuals set was to build a faster microprocessor. Others sought a smaller microprocessor. Others sought a microprocessor made from different materials. And so on. Most goals are recombinations and extensions of pre-existing goals. This means that one locus of sequential innovation is in goal space, as firms and individuals choose their goals from a set of options based on their previous goals and the goals of others.

Goals are remixes. Creators of expressive works, for example, can choose to mash up the creative aims of their predecessors. They might seek to write a novel that explores a particular historical setting (a goal of all historical novels) that is also a novel with an unreliable narrator (a goal of certain modern fiction). Perhaps those two goals had been joined before, perhaps not. Moreover, creators might have goals about tools and other
building blocks of creativity that they aspire to build. One example might be a musician who develops a new piece of music-editing software. The key point is that the goals are intangible goods that can be used and re-used.

Inventors can seek combinations in an analogous way. An industrial scientist might aim to develop an airplane (an old goal) and to construct the wings using a recently developed metal not yet used in flight (a new goal, because the material is new). It is familiar, in the patent context, to discuss inventions as combinations of prior art. But recall, using my definition of a goal, that I am drawing a distinction between the goal or objective of combining two inventions and the ideas inherent in a technology that achieves that goal. Fulfillment of the goal switches us from goal space to the more familiar continuum from abstract ideas to specific, patentable technologies. Again, it is easy to mistake goals and ideas: the same words might express them. But goals have a special function. We should analyze them separately, because their economic role is different than (though of course related to) the role of ideas.

In choosing goals and considering ways to combine and extend them, creators and inventors will face constraints. Using Professor Lawrence Lessig’s categorization of the sources of regulation—what shapes behavior?—we can think of the ways that law, the market, social norms, and technology (also known as architecture or code) regulate and constrain the choice of goal. Part of the goal-setting process must involve responding to these constraints in some way.

With this conception of goals in place, one can think of an innovation process with the following parts: a goal-setting process; development of ideas to reach the goals; reduction of technologies to practice or fixing expression in a tangible medium; choices about IP protection; marketing and licensing strategies; and dissemination to the public.

24 This raises the patent-law issue of non-obviousness.
So far, I have argued that goals are intangible goods and that goals are intermediate goods, in that downstream creators and inventors will want to re-use, tweak, and combine pre-existing goals. The implications of these two propositions are rich and under-explored. Goals, concepts, missions, and objectives, being intangible and useful for production of other goods, have the properties of public goods. They are non-rival, up to the point of congestion. They are non-excludable; fairly difficult to block access to them. Those two qualities together present the possibility of under-provision. I would not, however, contend that goals are in short supply; perhaps it is more accurate to say that worthy, valuable goals are in short supply.

Calling something a public good is a statement about economics and an economic problem that could arise. It is not statement about whether government intervention is necessary. On the positive side, governmental institutions could help coordinate research and development activity. For example, the National Institutes of Health (NIH) or the National Science Foundation (NSF) in their research and grant-making are implicitly promoting certain goals, ideally communicating them to the people we need working toward them. Another example I have in mind here is President Kennedy's speech before a joint session of Congress on May 25, 1961 about sending a man safely to the moon before the end of the decade. On the down side, a governmental institution may crowd out private goals in its efforts to coordinate activity around what it views the proper goal. Thus, the theory of goals relates broadly to innovation policy.

Goals are also relevant to intellectual property law in particular. There are several reasons why goals are not protected by IP law. Protection would render government goals, like “build a better aircraft carrier,” expensive. If coopted, pursuing that goal would become an unauthorized taking; otherwise, pursuing the goal would need to be licensed. This is probably an undesirable result. Goals are by definition unrealized as yet, suggesting that

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multiple pursuers may be useful. Finally, goals are necessary to human flourishing; that is, some of the most appealing goals must be shared. On the other hand, goals and objectives can certainly be kept secret. This is true for the goals of individuals or firms. And so one key branch of IP—trade secret law—could in fact offer protection to goals.

Protecting really abstract ideas—for example, allowing the really broad patents on risk management—is a bit like allowing a firm to patent a goal. The line between abstract and sufficiently specific is a matter of interpretation. It’s not easy to mathematically model because the whole game is rhetorical. Each side is trying to (a) define a spectrum from [clearly not protected] to [clearly protected] and (b) place the taking from an invention or expressive work in question on that spectrum. Another example is that plots can be either summarized in successively more detailed sentences, broken into subsequences of events, organized by themes, or perhaps many other possibilities drawn from criticism. Each side will pick one or more of these frames, and then argue within that frame that they win. This is no different than any other legal argument. But it is inherently legal, which is perhaps why it resists economic analysis.

More expansively, I think copying goals is seen as fair game in economic competition. Goals are essential to understanding competition. First, we might have competition among goals. Goal competition can be different than multiple entities racing or competing to fulfill the same goal. Goals can also conflict in their physical meaning. Example of goal competition of this sort: “eradicate measles” versus “discourage the use of vaccines because they are dangerous.”

There is also competition among firms in terms of copying another firm’s goal. Goals are not particularly scarce. But valuable or productive ones are. When an expressive work or an invention is created, it immediately generates a new goal: to build on that work or invention. Perhaps when firms or individuals search for appealing goals, they see these “sequel goals” as
particularly attractive. There’s a quantum of popularity or quality they might harness.

Most firms and sole proprietorships have goals, and might even compete in goal space. In some sense, this is implicit in all microeconomic models in which firms compete, choose whether to enter, and so on. For instance, copyists have a particular goal of mimicking—exactly, or closely but more cheaply, or closely but differentiated—an existing product.

Property rights in goals would be like the whaling cases in (real) property law: the property right comes from making an effort. It’s like a contest setting except the contest is to be the first to enter the contest. The prize is having the field cleared for you. IP law could choose to do this for goal setters, but does not. Some of the reasons are outlined above. But it’s worth remembering that the law can attempt to intervene and make goals excludable, ostensibly for the sake of solving the public good problem.

The degree to which goals are rival is interesting. Adopting a goal is non-rival; it’s essentially free for people to have the same goal in mind. But there can be congestion and competition because the value of the public good can change. Here there’s a separation between the physical/mental reality (totally nonrival for the goal to be shared) and the economic reality (rival for the goal to hold its value). This is different from public goods that are directly consumed. But goals are mostly intermediate goods, except for the utility that comes from the enjoyment and personal satisfaction people feel just from having goals.

One puzzle arises from these qualities of goods: Why don’t firms simply copy the mission statements and objectives of successful firms? For example, if Apple’s stated mission is “X, Y, and Z” why wouldn’t another firm just copy it directly? Instead, firms try to copy parts of goals but then tailor them or improve them. Or, firms aim lower, to be the low-rent version of something good. My interpretation of this phenomenon is simply that the value of a goal is relative to the holder. Its value depends on capital (human and not), labor, and the ideas and technology that a firm or individual have at
their disposal. This ends up being pretty straightforward, but there is something interesting about goals being non-excludable yet many firms prefer not to copy verbatim the goals and missions of other firms. Maybe people seem to want to try to be unique or different, regard mission copying as against fair play, or might overestimate how closely the capital, labor, and other institutional conditions must mimic the original firm’s.

Finally, goals are something to model and measure. Having a sense of the goal-setting process allows us to think about a feedback loop among goals, ideas, and marketable works and inventions. There are complex interrelationships—both tradeoffs and complementarities—among all those categories. In the end, focusing on goal-setting in addition to other stages of the innovation process gives us a more sophisticated way to model the key dimensions of IP law: duration, scope, and so on. The next section offers some initial thoughts in that direction.

**IV. Legal Implications**

[This section still to come.]