

CREATING AROUND COPYRIGHT

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*Joseph P. Fishman**

It is generally understood that the copyright system constrains downstream creators by limiting their ability to use protected works in follow-on expression. Those who view the promotion of creativity as copyright's mission usually consider this constraint to be a necessary evil at best and an unnecessary one at worst. This conventional wisdom rests on the seemingly intuitive premise that more creative choice will deliver more creativity. Yet that premise is belied by both the history of the arts and contemporary psychological research on the creative process. In fact, creativity flourishes best not under complete freedom, but rather under a moderate amount of restriction. Drawing from work in cognitive psychology, management studies, and art history, this Article argues that contemporary copyright discourse has overlooked constraint's generative upside. The Article unpacks the concept of constraint into seven characteristics: source, target, scope, clarity, timing, severity, and polarity. These characteristics function as levers that determine a given constraint's generative potential. Variation in that potential provides an underappreciated theoretical justification for areas in which copyright law is restrictive, such as the exclusive derivative work right, as well as areas where it is permissive, such as the independent creation and fair use defenses. The Article reveals that the incentives versus access debate that has long dominated copyright theory has misunderstood the relationship between creativity and constraint. Information may want to be free, but creativity does not.

INTRODUCTION.....	2
I. A BRIEF DEFINITION OF CREATIVITY	8
II. CREATIVITY AND CONSTRAINT IN COPYRIGHT THEORY.....	12
A. <i>The Constraint Critique</i>	13
B. <i>Inventing Around and Creating Around</i>	18
III. CONSTRAINT AS A SOURCE OF CREATIVITY.....	24
A. <i>Creativity and the Path of Least Resistance</i>	26
B. <i>Empirical Studies</i>	28
1. Creative Invention Experiments.....	28
2. Creative Cognition in Toy Design.....	30

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3. Creative Cognition in Knitwear.....	31
4. Design Fixation Studies.....	32
5. Fieldwork.....	33
6. Summary.....	35
IV. A MODEL OF GENERATIVE CONSTRAINT.....	35
A. <i>Source</i>	40
B. <i>Target</i>	42
C. <i>Scope</i>	45
D. <i>Clarity</i>	48
E. <i>Timing</i>	50
F. <i>Severity</i>	51
G. <i>Polarity</i>	53
V. GENERATIVE INFRINGEMENT DOCTRINES.....	55
A. <i>Constraints That Help</i>	55
B. <i>Constraints That Hurt</i>	61
CONCLUSION.....	63

INTRODUCTION

Art is always the result of some kind of constraint. To believe that the freer it is, the higher it rises, is the same as believing that what keeps the kite from flying is its string.

André Gide, *The Evolution of the Theater* (1904)¹

Copyright constrains creators. Although the grant of exclusive rights incentivizes some to produce new information, it also limits others' ability to use that information as raw material for follow-on expression. Copyright owners are in most cases entitled to charge any license fee they wish or to refuse to license altogether, so proprietary information is often burdensome to appropriate lawfully.

To intellectual property scholars, that burden has long been a common target. On the standard account, copyright protections exist primarily in order to promote creativity.² Because creativity is a cumulative process, entitling

¹ ANDRÉ GIDE, MY THEATER: FIVE PLAYS AND AN ESSAY 263 (Jackson Matthews trans., 1952).

² See, e.g., *Eldred v. Ashcroft*, 537 U.S. 186, 223 (2003) (observing that exclusive intellectual property rights are “intended to encourage the creativity of ‘Authors and Inventors’”); *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975) (stating that the “ultimate aim” of copyright law is “to stimulate artistic creativity for the general public good”); *Kelly v. Arriba Soft Corp.*, 336 F.3d 811, 820 (9th Cir. 2003) (“The Copyright Act was intended to promote creativity, thereby benefitting the artist and the public alike.”); Ned Snow, *The Regressing Progress Clause: Rethinking Constitutional Indifference to Harmful Content in Copyright* 47 U.C. DAVIS L. REV. 1, 39 (2013) (“[I]n no uncertain terms the Court has articulated a view of copyright that defines the primary objective of copyright as creativity or originality (which

upstream creators to control downstream use has traditionally been justified as a necessary evil, socially valuable only to the extent that it stimulates upstream creation in the first place.³ Many believe that this value has been overstated. Our copyright system, the argument goes, ends up stifling more downstream creativity than is offset by the marginal upstream creativity that the system incentivizes.⁴ Upstream creators would have sufficient motivation to invest in creating even without control of downstream use. Granting them this control raises downstream creators' costs to the point where copyright on net suppresses more creativity than it encourages. If the necessary evil is not really necessary, then our intellectual property system—an instrument intended to be “subservient to the value of creativity”—has become perverse.⁵

There is seldom discussion of whether the necessary evil is really evil. But there should be. Much of scholars' criticism rests on the premise that creativity thrives best when creators have unconstrained freedom.⁶ If that is right, then an ideal regime would adequately compensate the upstream creator all while placing no constraints whatsoever on downstream use. The existing literature surrounding that premise, however, gives little attention to the question of how restrictions on downstream reuse affect the expressive works that downstream creators are likely to make. What is the result of pushing those downstream to create around a copyright?

Paradoxically, the result is often more creativity. George Lucas crafted the plot for *Star Wars* only after he failed to get a license for a remake of *Flash Gordon*. Unable to use the precise creative universe he initially identified, he distilled particular visual and thematic aspects of that universe and used them

turns on creativity.”); Julie E. Cohen, *Creativity and Culture in Copyright Theory*, 40 U.C. DAVIS L. REV. 1151, 1151 (2007) (“Creativity is universally agreed to be a good that copyright law should seek to promote.”).

³ See, e.g., Michele Boldrin & David K. Levine, *Does Intellectual Monopoly Help Innovation?*, 5 REV. L. & ECON. 991, 991 (2009); Mark A. Lemley, *Ex Ante versus Ex Post Justifications for Intellectual Property*, 71 U. CHI. L. REV. 129, 131 (2004); WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW* 69 (2003).

⁴ See *infra* Part II.A. There are other prominent critiques that I do not take up here. Among these are the familiar problem that copyright's monopoly rents impose deadweight loss on society, see, e.g., LANDES & POSNER, *supra* note 3 at 11; and the rights-based argument that the First Amendment entitles downstream creators the liberty to express themselves using elements of others' copyrighted works, see, e.g., Rebecca Tushnet, *Copy This Essay: How Fair Use Doctrine Harms Free Speech and How Copying Serves It*, 114 YALE L.J. 535 (2004). My goal is to address the creativity debate on its own terms.

⁵ LAWRENCE LESSIG, *FREE CULTURE: HOW BIG MEDIA USES TECHNOLOGY AND THE LAW TO LOCK DOWN CULTURE AND CONTROL CREATIVITY* 33 (2004). The same critique, right down to the master-servant metaphor, can be found in JAMES BOYLE, *THE PUBLIC DOMAIN: ENCLOSING THE COMMONS OF THE MIND* 15 (2008) (arguing that “[c]opyright, intended to be the servant of creativity... is becoming an obstacle”).

⁶ See, e.g., LESSIG, *supra* note 5, at xiv (arguing that in order to promote creativity, “follow-on creators and innovators [should] remain as free as possible from the control of the past”). For other examples, see Part III.A below.

to construct the now familiar setting a long time ago in a galaxy far, far away.⁷ Video game enthusiasts have a similar licensing holdup to thank for *Donkey Kong* and the birth of the Mario character, which its creator initially intended to be Popeye.⁸ Historical accounts of the Fashion Originators' Guild, which in the 1930s began enforcing private restrictions on copying fashion designs, report that the prohibitions increased design innovation.⁹ Today, many DJs who rely on sampling have developed new, intricate forms of layering and collage in an effort to work around copyright limits on simpler uses of samples.¹⁰ A filmmaker finds artistic inspiration in the search for affordable soundtrack music after his first choice proved too expensive.¹¹ A poet who riffs off others' texts finds that inspiration in having to stay within the boundaries of the fair use defense.¹² "Rather than limiting my creativity," he says, "these [copyright] constraints make the poems better."

These works are the product of a fundamental yet underappreciated fact about the creative process: it thrives best not under complete freedom, but rather under a moderate amount of restriction. Scratch the surface of most art forms and you will find a set of rules. Whether it is the structure and meter of a sonnet, the form of a sonata, the plot conventions of a Shakespearean comedy, the technique of classical ballet, or the basic shapes of a Cubist painting, art typically has a governing framework, a set of conventions that restricts its subjects while still allowing a seemingly infinite number of possibilities within those constraints.¹³ Constraint's creative power is the

⁷ J.W. RINZLER, *THE MAKING OF STAR WARS: THE DEFINITIVE STORY BEHIND THE ORIGINAL FILM* (2008).

⁸ ADAM SUTHERLAND, *THE STORY OF NINTENDO 30* (2012); JEFF RYAN, *SUPER MARIO: HOW NINTENDO CONQUERED AMERICA* (2011); Nick Paumgarten, *Master of Play*, *NEW YORKER*, Dec. 20, 2010, at 86.

⁹ See C. Scott Hemphill & Jeannie Suk, *The Law, Culture, and Economics of Fashion*, 61 *STAN. L. REV.* 1147, 1194 (2009) (discussing historical sources).

¹⁰ See Justin Morey, *Copyright Management and Its Effect on the Sampling Practice of UK Dance Music Publishers*, 3 *J. INT'L ASSOC. STUDY POP. MUSIC* 48, 59 (2012); KEMBREW MCLEOD & PETER DICOLA, *CREATIVE LICENSE: THE LAW AND CULTURE OF DIGITAL SAMPLING*, 190–91, 195–96 (2011); Thomas W. Joo, *Remix Without Romance*, 44 *CONN. L. REV.* 415, 457–58 (2011).

¹¹ David Newhoff, *Copyright and the Creative Process*, *THE ILLUSION OF MORE* (Jul. 7, 2013), <http://illusionofmore.com/copyright-and-the-creative-process/>.

¹² Austin Kleon, *Copyright Rules and the Art They Inspire*, *N.Y. TIMES ROOM FOR DEBATE*, (Oct. 10, 2012), <http://www.nytimes.com/roomfordebate/2012/10/10/does-the-law-support-inventors-or-investors/copyright-law-and-the-art-it-inspires>. Fair use, a judge-made doctrine now codified at 17 U.S.C. § 107, is "an equitable rule of reason which permits courts to avoid rigid application of the copyright statute when, on occasion, it would stifle the very creativity which that law is designed to foster." *Stewart v. Abend*, 495 U.S. 207, 236 (1990) (internal citations and quotation marks omitted).

¹³ See JON ELSTER, *ULYSSES UNBOUND: STUDIES IN RATIONALITY, PRECOMMITMENT, AND CONSTRAINTS* 209–13 (2000); see also Clive James, *Hit Men*, *NEW YORKER*, Jul. 7, 1997, at 70 (noting in reference to movie production budgets that "[t]o accept and transcend limitation

central conceit behind the popular cooking competition *Iron Chef*, where participants must prepare dishes featuring a surprise ingredient. Indeed, competing on that show is how Amanda Cohen, chef at the popular vegetarian restaurant Dirt Candy in New York City, came up with the idea for the restaurant's signature dish.¹⁴ Even art that appears to be freeform and improvisatory is subject to rules. A jazz solo conforms to the harmony of the accompaniment. Improv comedians perform sketches revolving around a fixed theme. And when artists rebel against a particular framework, they nearly always adopt a new one.¹⁵ Arnold Schoenberg, for example, famously abandoned tonality in musical composition, only to adopt the rules of twelve-tone technique. In each of these cases, the rules that define artistic conventions generate endless possibilities for exploring the same playing field.¹⁶

Constraint's generativity extends beyond the arts.¹⁷ Entrepreneurial firms have begun to embrace constraint as an organizational management philosophy. They have found that having to design around a limitation yields new ideas that would not have emerged as quickly in the absence of that limitation.¹⁸ That means embracing existing constraints, like budgets or

can be a source of creative vibrancy, whereas to eliminate it with money almost always leads to inertia.”).

¹⁴ SENDHIL MULLAINATHAN & ELДАР SHAFIR, SCARCITY: WHY HAVING SO LITTLE MEANS SO MUCH 19–20 (2013); see also Marc Graser, *Fresh Ingredients Infuse 'Top Chef'*, VARIETY, Nov. 6, 2012 (quoting *Top Chef* executive producer's view that the program is about “how the constraints of working with limited ingredients and resources force you to make more creative choices”).

¹⁵ Philip N. Johnson-Laird, *Freedom and Constraint in Creativity*, in THE NATURE OF CREATIVITY: CONTEMPORARY PSYCHOLOGICAL PERSPECTIVES 212–13 (R.J. Sternberg ed. 1988).

¹⁶ See MARGARET A. BODEN, THE CREATIVE MIND: MYTHS AND MECHANISMS 95 (2d ed. 2004); Dean Keith Simonton, *Creativity in Personality, Developmental, and Social Psychology: Any Links with Cognitive Psychology?*, in CREATIVE THOUGHT: AN INVESTIGATION OF CONCEPTUAL STRUCTURES AND PROCESSES 309 (Ward et al. eds., 1997).

¹⁷ I adopt here Jonathan Zittrain's definition of generativity as “a system's capacity to produce unanticipated change through unfiltered contributions from broad and varied audiences.” JONATHAN ZITTRAIN, THE FUTURE OF THE INTERNET—AND HOW TO STOP IT 70 (2008).

¹⁸ See, e.g., David Sturt, *Creativity: How Constraints Drive Genius*, FORBES, July 12, 2013; Henry Doss, *Innovation: A Tale of Language, Marissa Mayer, Francis Bacon and the Sonnet*, FORBES, Mar. 4, 2013; Matthew E. May, *How Intelligent Constraints Drive Creativity*, HBR BLOG NETWORK (Jan. 30, 2013, 11:00 AM), http://blogs.hbr.org/cs/2013/01/how_intelligent_constraints_dr.html; Bill Fischer, *Don't Relax Constraints, Embrace Them*, FORBES, Jan. 9, 2012; JEFFREY H. DYER, ET AL., THE INNOVATOR'S DNA: MASTERING THE FIVE SKILLS OF DISRUPTIVE INNOVATORS 78–79 (2011); CHRIS BILTON, MANAGEMENT AND CREATIVITY: FROM CREATIVE INDUSTRIES TO CREATIVE MANAGEMENT 77–85 (2007); Michael Gibbert et al., *In Praise of Resource Constraints*, 48 MIT SLOAN MGMT. REV. 15 (2007); Uri Neren, *The Number One Key to Innovation: Scarcity*, HBR BLOG NETWORK (Jan. 14, 2011, 9:00 AM), <http://blogs.hbr.org/2011/01/the-number-one-key-to-innovati/>; Scott Dadich, *Design*

scarcity of raw materials, as stimuli for unconventional solutions. It also means voluntarily imposing artificial prohibitions, like a hypothetical illegalization of an existing business model.¹⁹ No less an innovator than Google summed up this attitude in its oft-repeated principle that “creativity loves constraints.”²⁰ Marissa Mayer, an architect of that principle at Google and now CEO of Yahoo!, has stated that “creativity thrives best when constrained,” attributing Google’s innovation in software to the company’s need to satisfy a heterogeneous consumer base.²¹

That a decrease in creative freedom could yield an increase in creative production is a process already well known to psychologists. In both controlled experiments and fieldwork, researchers have found that a moderate amount of constraint increases creativity.²² Limitlessness lets us default, sometimes unconsciously, to what we have seen before. As one researcher put it, “[w]ithout constraints, composition takes place in a cul-de-sac of the customary (a familiar subject) and the successful (a style worth an ‘A’ in the past, in this class).”²³ Constraint mitigates this phenomenon. When the mind is forced to navigate within limits and around obstacles, it is less likely to revert to previous solutions. Because human imagination benefits from adding a bit of resistance to the path of least resistance, freedom and creativity often work at cross-purposes.

Copyright scholarship has neglected constraint’s generative upside for the production of creative expression downstream. This Article fills that gap. In doing so, it moves beyond the long-running debate in utilitarian copyright discourse that has pit the value of downstream creativity against the need for upstream incentives. Both sides of that debate have embraced a tradeoff far starker than need actually exist. Copyright restrictions that produce upstream incentives, like so many other constraints under which creators work, can themselves stimulate creativity. Indeed, copyright excludability can do directly what other constraints can only do obliquely: limit access to the most familiar solutions.

To be sure, there is such a thing as counterproductive constraint. Psychologists describe a curvilinear relationship between creativity and

Under Constraint: How Limits Boost Creativity, WIRED, Feb. 23, 2009.

¹⁹ DYER, ET AL., *supra* note 18, at 78–79.

²⁰ *Id.*

²¹ Marissa Ann Mayer, *Creativity Loves Constraints*, BUSINESSWEEK, Feb. 12, 2006. Jeff Bezos, CEO of Amazon.com, adopts a similar stance. In its early days, Amazon had scarce capital. That scarcity stimulated Amazon’s development of its associates program, a cheap but effective way to drive traffic to its website. “Frugality,” Bezos explained, “drives innovation, just like other constraints do. One of the only ways to get out of a tight box is to invent your way out.” *Bezos on Innovation*, BUSINESSWEEK, Apr. 16, 2008.

²² See *infra* Part III.B.

²³ Patricia D. Stokes, *Using Constraints to Generate and Sustain Novelty*, 1 PSYCH. AESTHETICS, CREATIVITY, & ARTS 107, 107 (2007).

constraint: increasing constraint up to a point increases creative output, but past that point any further increases will cause that output to drop off.²⁴ Locating that point on the constraint axis is the key to optimizing a cumulative creativity regime. Because legal scholars have treated constraint as inimical to creativity, they have presumed that the ideal amount of copyright restriction is zero. My analysis indicates that it may be greater. How much greater is ultimately an empirical question, and this Article offers a theoretical model for how to go about answering it.

The Article proceeds in five parts. Part I introduces the definition of creativity that I employ here. Part II reviews the place of creative workarounds in intellectual property discourse. Patent commentary going back over fifty years has acknowledged the potential social value in stimulating effort to develop alternatives to existing technology. The basic insight is that the patentee's right to exclude triggers a virtuous cycle in which one invention begets a competing and sometimes even better invention. Copyright scholarship has paid comparatively little attention to that potential for expressive works. And in neither field have scholars considered how constraint can benefit innovators during the creative process.

Part III surveys the substantial psychology and management literature on creativity under constraint. Building off of that literature, Part IV develops a model that helps predict when constraints are likely to help and when they are likely to hurt. Because different kinds of constraint affect creativity in different ways, the model here envisions constraint as a combination of several qualitative variables: source, target, scope, clarity, timing, severity, and polarity. A given constraint's generative potential depends on the way it mixes these variables. The inquiry therefore involves asking not only how much but also what kind of constraint is at issue.

Part V uses this model as a lens through which to assess both copyright law and potential revisions to it. The size of a constraint's generativity provides an underappreciated theoretical justification for areas in which copyright law is restrictive, such as the exclusive derivative work right, as well as areas where it is permissive, such as the independent creation and fair use defenses. At the same time, my analysis shows several ways to make existing copyright constraints more generative than they already are. First, make the boundaries of copyright owners' entitlements less fuzzy. Cumulative creativity would be better off with at least some bright lines within an area of law defined almost entirely by ambiguous standards that dissuade create-around efforts. Recent grassroots efforts to clarify fair use doctrine through codes of best practices are a promising start. Second, even where particular

²⁴ See *infra* Part III.B. See also Sandra Ohly et al., *Routinization, Work Characteristics and Their Relationships with Creative and Proactive Behaviors*, 27 J. ORG. BEHAVIOR 257 (2006) (finding curvilinear relationship between time pressure and creativity); ELSTER, *supra* note 13, at 212–13 (observing a curvilinear relationship from perspective of aesthetic theory).

adaptations are infringing, courts should take care not to prohibit the artistic processes that generated them. Creating around product constraints is both more feasible and more engaging than creating around process constraints. Third, because constraints enable creativity best when artists perceive them as challenges to be overcome rather than burdens to be borne, the most generative copyright restrictions will likely be those that creators intrinsically respect. This underscores the importance of avoiding policies likely to stoke popular backlash. For creators who find inspiration in navigating other constraints but not in navigating copyright, the problem may have as much to do with sociocultural factors as it does with the objective qualities of the constraint itself.

I. A BRIEF DEFINITION OF CREATIVITY

In order to measure creativity, one must first be able to recognize it. Copyright doctrine is not well equipped to handle that task, but psychology is. Legal scholars have in recent years begun to mine the psychological literature for insight into the creative process that economic models have not been able to provide.²⁵ These findings illuminate intellectual property policy in two ways. First, simply enough, they reveal how creators go about the process of creation. Second, as Jeannie Fromer has emphasized, they can fill the gap left by researchers' inability to gather reliable data on how intellectual property affects innovation outcomes.²⁶ Because it has proven so difficult to show a causal link between intellectual property incentives and particular results on the ground, psychological research can at least inform policymakers about how to engage creative thinking on the front end.²⁷

Psychologically, there is no difference between scientific creativity and artistic creativity; the mechanisms are the same.²⁸ In each domain, creativity lies in the generation of a product or idea that satisfies two criteria: originality and appropriateness.²⁹ The first criterion tracks whether the product is new in

²⁵ See Erez Reuveni, *Copyright, Neuroscience, and Creativity*, 64 ALA. L. REV. 735 (2013) (access to information); Gregory N. Mandel, *Left-Brain Versus Right-Brain: Competing Conceptions of Creativity in Intellectual Property Law*, 44 U.C. DAVIS L. REV. 283 (2010) (joint authorship); Jeanne C. Fromer, *A Psychology of Intellectual Property*, 104 NW. U. L. REV. 1441 (2010) (protectability thresholds). For a creativity scholar's introduction of the field to a patent law audience, see R. Keith Sawyer, *Creativity, Innovation, and Obviousness*, 12 LEWIS & CLARK. L. REV. 461 (2008).

²⁶ Fromer, *supra* note 25, at 1444, 1458–59.

²⁷ *Id.*

²⁸ See TERESA M. AMABILE, CREATIVITY IN CONTEXT 34 (1996) (“[T]here is one basic form of creativity, one basic quality of products that observers are responding to when they call something ‘creative,’ whether they are working in science or the arts.”). For summaries of the literature showing that the creative process operates similarly across both scientific and artistic domains, see Fromer, *supra* note 25, at 1444; Mandel, *supra* note 25, at 331.

²⁹ See, e.g., Sawyer, *supra* note 25, at 462; Richard E. Mayer, *Fifty Years of Creativity Research*,

some significant way, while the second criterion tracks whether it has some social value (as creativity scholar Keith Sawyer notes, “many dreams are novel but rarely have any impact on the world after breakfast.”).³⁰ Both are measured according to the consensus of a particular community.³¹ What is new and appropriate is that which the audience deems new and appropriate.³²

Legal scholars have recently noted this definition’s conceptual similarity to patent law’s novelty and utility requirements.³³ The definition meshes well with copyright requirements, too. Originality is, after all, “the *sine qua non* of copyright.”³⁴ And the appropriateness requirement demands only that an audience find value in the product,³⁵ whether it be the technological value of a better mousetrap or the entertainment value of *The Mousetrap*.³⁶ Appropriateness thus encompasses the sort of aesthetic utility that one nineteenth-century copyright decision identified when it explained, “whatever is beautiful is useful, because beauty gives pleasure, and pleasure is a kind of happiness, and happiness is the ultimate object of the use of all things.”³⁷ Because the arbiter of value is the audience, the psychological definition of creativity evokes “intellectual property’s aim of giving protection for products that are requisitely new, while leaving to society the question of how valuable

in HANDBOOK OF CREATIVITY 449, 449 (Robert J. Sternberg ed., 1999); DEAN KEITH SIMONTON, ORIGINS OF GENIUS: DARWINIAN PERSPECTIVES ON CREATIVITY 5–6 (1999); Robert J. Sternberg & Todd I. Lubart, *The Concept of Creativity: Prospects and Paradigms*, *in id.* at 3, 3; Teresa M. Amabile, *The Social Psychology of Creativity: A Componential Conceptualization*, 45 J. PERS. & SOC. PSYCH. 357, 358–59 (1983); Morris Stein, *A Transactional Approach to Creativity*, *in* THE 1955 UNIVERSITY OF UTAH RESEARCH CONFERENCE ON THE IDENTIFICATION OF CREATIVE SCIENTIFIC TALENT 172 (C.W. Taylor ed. 1956) (defining creativity as “that process which results in a novel work that is accepted as tenable or useful or satisfying by a group at some point in time”)

³⁰ Sawyer, *supra* note 25, at 462.

³¹ SIMONTON, *supra* note 29, at 5–6; AMABILE, *supra* note 28, at 33–37. According to this definition, a creator’s independent invention of an existing product is original, even if another creator in a different place may have come up with the idea first. Simonton gives the example of Galileo’s discovery of sunspots, which was novel to Europeans although the Chinese had discovered them a thousand years earlier. SIMONTON, *supra* note 25, at 6.

³² SIMONTON, *supra* note 29, at 6.

³³ See Mandel, *supra* note 25, at 334–36; Fromer, *supra* note 25, at 1459–60; *see also* John C. Huber, *Invention and Inventivity Is a Random, Poisson Process: A Potential Guide to Analysis of General Creativity*, 11 CREATIVITY RES. J. 231, 232 (1998) (noting that “[s]ome commonly accepted definitions of creativity closely parallel those of patents”); *cf.* Mandel, *supra* note 25, at 334 n.211 (noting that the consensual definition tracks patent law’s nonobviousness requirement). Patent law’s novelty requirement is nonetheless stricter than psychologists’ in that it excludes independent creation of an existing invention.

³⁴ *Feist Publ’ns, Inc. v. Rural Tel. Serv. Co., Inc.*, 499 U.S. 340, 345 (1991).

³⁵ Fromer, *supra* note 25, at 1460; Mandel, *supra* note 25, at 335; Sawyer, *supra* note 25, at 462.

³⁶ *See* AGATHA CHRISTIE, *THE MOUSETRAP* (1952). *Cf.* *Mouse Trap (Game)*, WIKIPEDIA, [http://en.wikipedia.org/wiki/Mouse_Trap_\(game\)](http://en.wikipedia.org/wiki/Mouse_Trap_(game)).

³⁷ *Henderson v. Tompkins*, 60 F. 758, 763 (C.C. Mass. 1894).

the product ought to be considered.”³⁸

Whether a task is susceptible to a creative approach depends on whether the task is well-structured or ill-structured.³⁹ A well-structured problem is one that may be solved algorithmically based on definite and available criteria. The statement of the problem dictates its own path to solution. Jigsaw puzzles, standardized tests, and crosswords are all examples. There is no room for originality, and hence no room for creativity, in naming an eight-letter phrase beginning with the letter S that identifies a short-lived 1765 statute.⁴⁰ An ill-structured problem, by contrast, is indeterminate. It offers no straightforward path to solution. Because an ill-structured problem fails to specify all information necessary for an appropriate result, it must be solved heuristically, not algorithmically.⁴¹ Writing a law review article, for instance, is an ill-structured task. So is composing a sonata, deciding how to invest money, finding a cure for a disease, or designing a building.⁴² Unless these tasks are governed by paint-by-number-style instructions, there is no fully predictable way to accomplish them.⁴³

It is within ill-structured problem spaces that creativity emerges.⁴⁴ Where the path to the solution is unknown at the outset, there is opportunity for a new and appropriate take on things. Creators need to bump around the problem space searching for an answer, a process that is obviated where the range of possible answers is foreordained. Copyright law implicitly reflects this distinction between ill-structured and well-structured problems through its merger doctrine.⁴⁵ That doctrine denies copyright protection where an underlying idea can be expressed in a predictably limited number of ways (the

³⁸ Fromer, *supra* note 25, at 1461.

³⁹ The distinction was first explored in Herbert A. Simon, *The Structure of Ill Structured Problems*, 4 *ARTIFICIAL INTELLIGENCE* 181 (1973). See also PATRICIA D. STOKES, *CREATIVITY FROM CONSTRAINTS: THE PSYCHOLOGY OF BREAKTHROUGH* 4–6 (2006); ROBERT WEISBERG, *CREATIVITY: UNDERSTANDING INNOVATION IN PROBLEM SOLVING, SCIENCE, INVENTION, AND THE ARTS* 138–140 (2006).

⁴⁰ See Stamp Act, 5 Geo. 3, c. 12 (1765), *repealed by* 6 Geo. 3, c. 11 (1766). Apologies to any readers still working on 41-Across in the *L.A. Times* daily crossword from February 9, 2014.

⁴¹ AMABILE, *supra* note 28, at 35.

⁴² Architecture is Simon’s archetypal example: “There is initially no definite criterion to test a proposed solution, much less a mechanizable process to apply the criterion. The problem space is not defined in any meaningful way, for a definition would have to encompass all kinds of structures the architect might at some point consider.” Simon, *supra* note 39, at 187.

⁴³ Amabile offers the comparison of two chemists synthesizing a new hydrocarbon complex. The first applies a familiar step-by-step process, while the second has to devise that process for the first time. Although in either case the product may be both new and appropriate, only the second involves the exercise of creativity. AMABILE, *supra* note 28, at 36.

⁴⁴ *Id.* at 35–36; STOKES, *supra* note 39, at 4.

⁴⁵ See Fromer, *supra* note 25, at 1495 (noting connection between merger doctrine and the creative process).

idea and expression have, in essence, “merged”).⁴⁶ In those situations, the problem is well structured, precluding the exercise of creativity that copyright protection is intended to promote.

The path to the goal is not the only part of an ill-structured problem that can be uncertain. Sometimes the goal itself is incompletely specified, awaiting development by the problem solver.⁴⁷ Early Cubists, for example, did not start out with a clear idea of how their nascent style ought to operate.⁴⁸ The destination, let alone the route to get there, was unfixed.

That a task’s goal can be ill-structured has led many theorists to treat not just problem-solving but also problem-finding as a locus of creativity. While creative problem-solving involves generating a new and appropriate answer to an already identified problem, creative problem-finding involves “discover[ing] the problem and first pos[ing] the question in such a way that it lends itself to solution.”⁴⁹ A scientist who identifies a new use for an existing product is a creative problem-finder, as is an artist who chooses a new subject to explore.⁵⁰ Creativity scholar Jacob Getzels illustrates this concept using a hypothetical driver who blows a tire on a backcountry road only to discover that he has no tire jack in the trunk. If he sets off in search for a tire jack, he has formulated the problem uncreatively; if, by contrast, he searches his surroundings for another way to raise the car off the ground, he has formulated it creatively.⁵¹ The uncreative problem finder wanders for miles seeking a service station, while the creative problem finder realizes that he can use the pulley at the barn fortuitously located across the street.⁵² While many associate creativity most with problem solving, creativity in problem finding is just as important.⁵³ Problem finding affects the trajectory of problem solving. As Einstein put it, “[t]he formulation of a problem is often more essential than its solution, which may be merely a matter of mathematical skill. To raise new

⁴⁶ See, e.g., *Kern River Gas Transmission Co. v. Coastal Corp.*, 899 F.2d 1458, 1463–64 (5th Cir. 1990); *Morrissey v. Procter & Gamble Co.*, 379 F.2d 675, 678–79 (1st Cir. 1967).

⁴⁷ AMABILE, *supra* note 31, at 35–36 (observing that many heuristic tasks “do not have clearly defined solutions or goals, and it is part of the problem-solver’s task to identify them”).

⁴⁸ STOKES, *supra* note 39, at 4; WEISBERG, *supra* note 39, at 580, 583–84.

⁴⁹ Sawyer, *supra* note 25, at 473; see also AMABILE, *supra* note 28, at 36. For an in-depth exploration of creative problem finding, see the essays in *PROBLEM FINDING, PROBLEM SOLVING, AND CREATIVITY* (Mark A. Runco ed. 1994).

⁵⁰ Sawyer, *supra* note 25, at 474 (giving examples of laparoscopic surgery and Post-It notes); Fromer, *supra* note 25, at 1463 (giving example of Picasso’s *Guernica*); J.W. Getzels, *The Problem of the Problem*, in *NEW DIRECTIONS FOR METHODOLOGY OF SOCIAL AND BEHAVIORAL SCIENCE: QUESTION FRAMING AND RESPONSE CONSISTENCY* 37, 42 (R. Hogarth ed. 1982) (giving example of Matisse, who “set himself the problem of painting grass red and roses green”).

⁵¹ Getzels, *supra* note 46, at 38–39.

⁵² *Id.*

⁵³ Sawyer, *supra* note 25, at 473 (noting that “historically, the most radical breakthroughs result from problem finding creativity.”)

questions, new possibilities, to regard old questions from a new angle, requires creative imagination and marks real advance in science.”⁵⁴

While this model of creativity is intuitive enough when applied to science, the notion of artistic “problems” to be found and solved might at first seem puzzling.⁵⁵ Most of us do not tend to view expressive works, even great ones, as solutions to problems. Yet that is, at bottom, what they are. The artist’s problems, according to Getzels and fellow creativity expert Mihalyi Csikszentmihalyi, are how to translate life experiences into an expressive medium and to “reveal[] meanings that were not perceived before the work of art was completed.”⁵⁶ Defining and overcoming that challenge infuses all artistic decisions, from formulating the goal of the project to selecting its thematic content to picking the physical materials for its execution.⁵⁷ A solution to an expressive problem could be depicting a recognizable subject in a way that will produce a particular impact (say, the barbarism conveyed in Picasso’s *Guernica* or Stravinsky’s *Rite of Spring*), representing old themes in a new style (Monet’s development of Impressionism, or Braque and Picasso’s development of Cubism), developing a new goal (Mondrian’s move to non-representational art), or deploying an effective rhetorical tool for advocacy (Swift’s use of satire in *A Modest Proposal*).⁵⁸ Not every artistic problem will involve a clearly defined goal, and not every artist will approach a task with a goal already in mind.⁵⁹ In all cases of creative expression, however, the artist formulates a problem and produces expression intended to solve it.⁶⁰

Do copyright law’s infringement doctrines promote creativity—that is, novel and appropriate solutions to ill-defined problems? As the next Part shows, most scholars say no. The law’s constraining effects downstream are believed to reduce culture’s innate generativity. Yet, as I explain below, that constraint may cut toward the opposite conclusion.

II. CREATIVITY AND CONSTRAINT IN COPYRIGHT THEORY

Intellectual property rights yield a well-recognized static inefficiency by

⁵⁴ ALBERT EINSTEIN & LEOPOLD INFELD, *THE EVOLUTION OF PHYSICS* 92 (1938); see also MAX WERTHEIMER, *PRODUCTIVE THINKING* 123 (1945) (“Often in great discoveries the most important thing is that a certain question is found. Envisaging, putting the productive question is often a more important, often greater achievement than the solution of a set question.”).

⁵⁵ Fromer, *supra* note 25, at 1467 (noting conceptual difficulty).

⁵⁶ JACOB W. GETZELS & MIHALY CSIKSZENTMIHALYI, *THE CREATIVE VISION: A LONGITUDINAL STUDY OF PROBLEM FINDING IN ART* 154 (1976).

⁵⁷ See Fromer, *supra* note 25, at 1467; WEISBERG, *supra* note 39, at 583–84 (discussing problem-finding in the visual arts).

⁵⁸ See STOKES, *supra* note 39, at 5–6, 33–38, 108–11; WEISBERG, *supra* note 39, at 577–84.

⁵⁹ WEISBERG, *supra* note 39, at 139–40 (describing a painter who begins work at an easel without any preconception of what she wishes to paint).

⁶⁰ Fromer, *supra* note 25, at 1467.

granting firms exclusive rights that allow them to price informational goods above their marginal cost of production. The resulting deadweight loss is traditionally thought to be tolerable because it comes with a dynamic efficiency: inducing firms to invest in creative projects that they would not have pursued without the means to exclude imitators who could free-ride off that investment. But this dynamic efficiency also carries its own potential dynamic inefficiency alongside it. Innovation is cumulative.⁶¹ In both science and art, the creations of today will be raw material for the creations of tomorrow.⁶² That the goods protected by intellectual property are not only one's output but also another's future input means that too much exclusivity can impede the production of new goods over time. As a result, any exclusive right must be large enough to induce investment in creativity upstream but not so large that it inhibits creativity downstream.

How legal constraint affects innovation is a question with which both copyright and patent scholars have struggled. Yet their treatment of the issue is surprisingly different. Patent commentary has had a robust debate over the social value of stimulating effort to develop alternatives to existing technology—"inventing around" in patent parlance. Copyright theory lacks a similarly developed discussion over the downstream benefits of circumventing protected works. With the occasional exception discussed below, commentators in the copyright space have tended to focus on upstream incentives as the only potential casualty of downstream choice. This Part first surveys how copyright's constraints have been analyzed. It then turns to the concept of "inventing around" within the patent literature and explores whether that concept can do meaningful work in a utilitarian account of copyright's effects.

A. *The Constraint Critique*

The extent of copyright law's constraint on downstream creators depends chiefly on two of the owner's exclusive rights: the right to reproduce

⁶¹ Although the intellectual property literature has recently begun to distinguish between the terms "innovation" and "creativity," see, e.g., Doris Estelle Long, *Crossing the Innovation Divide*, 81 TEMP. L. REV. 507, 543 n.14 (2008), most scholars continue to use them interchangeably. See Gaia Bernstein, *In the Shadow of Innovation*, 31 CARDOZO L. REV. 2257, 2271–73 (2010) (describing overlapping usage). My analysis here follows the latter convention.

⁶² The sources on this point are legion. See, e.g., *White v. Samsung Elecs. Am. Inc.*, 989 F.2d 1512, 1513 (9th Cir. 1993) (Kozinski, J., dissenting from denial of rehearing en banc) ("Nothing today, likely nothing since we tamed fire, is genuinely new. Culture, like science and technology, grows by accretion, each new creator building on the works of those who came before."); LANDES & POSNER, *supra* note 3, at 66–67 (noting that because "[c]reating a new work typically involves borrowing or building on material from a prior body of works," less copyright protection means lower costs of expression).

a copyrighted work⁶³ and the right to prepare “derivative works” from it.⁶⁴ Courts have interpreted the reproduction right broadly. It guards against not just copying an entire work (say, photocopying a book), but also against non-verbatim copying that yields a work deemed to be “substantially similar” to protected expression.⁶⁵ Copying particular narrative elements like character and plot details may suffice.⁶⁶ So may appropriating the “total concept and feel” of the copyrighted work, whether it is a television program, greeting card, song, or Halloween mask.⁶⁷ Copying even a quantitatively small portion of the protected work may be enough to infringe.⁶⁸

The derivative work right protects against preparation of “a work based upon one or more existing works.”⁶⁹ In practice, this right does little that the already capacious reproduction right has not done already. Because any derivative will incorporate some independently copyrightable element of the original work, an infringement of the derivative work right will usually infringe the reproduction right as well.⁷⁰ Thus, in the average case of

⁶³ 17 U.S.C. § 106(1).

⁶⁴ 17 U.S.C. § 106(2).

⁶⁵ See ROBERT C. OSTERBERG & ERIC C. OSTERBERG, SUBSTANTIAL SIMILARITY IN COPYRIGHT LAW § 1:1 (2011); Shyamkrishna Balganes, *The Normativity of Copying in Copyright Law*, 62 DUKE L.J. 203, 214–32 (2012).

⁶⁶ See, e.g., *Sheldon v. Metro-Goldwyn Pictures Corp.*, 81 F.2d 49 (2d Cir. 1936) (concluding that pervasive copying of plot elements may constitute infringement); *Metro-Goldwyn-Mayer, Inc. v. Am. Honda Motor Co., Inc.*, 900 F. Supp. 1287 (C.D. Cal. 1995) (holding that a car commercial involving a James Bond-type protagonist likely infringed the copyright in the James Bond character); *Anderson v. Stallone*, 11 U.S.P.Q.2d (BNA) 1161 (C.D. Cal. 1989) (holding that copyrights in the characters from the *Rocky* film franchise were infringed by an unauthorized plot outline for a new sequel).

⁶⁷ *Dawson v. Hinshaw Music Inc.*, 905 F.2d 731, 733 (4th Cir. 1990); *Sid & Marty Krofft Television Prods., Inc. v. McDonald’s Corp.*, 562 F.2d 1157, 1167 (9th Cir. 1977); *Roth Greeting Cards v. United Card Co.*, 429 F.2d 1106, 1110 (9th Cir. 1970); *BSS Studio, Inc. v. Kmart Corp.*, 53 U.S.P.Q.2d 1509 (N.D. Ill. 1999).

⁶⁸ See, e.g., *Harper & Row Publishers, Inc. v. Nation Enters.*, 471 U.S. 539, 548–49 (1985) (several hundred words from a five-hundred-page book); *Bridgeport Music, Inc. v. Dimension Films*, 410 F.3d 792 (6th Cir. 2005) (two-second sample of sound recording).

⁶⁹ 17 U.S.C. § 101 (defining a derivative work as “a work based upon one or more preexisting works, such as a translation, musical arrangement, dramatization, fictionalization, motion picture version, sound recording, art reproduction, abridgement, condensation, or any other form in which a work may be recast, transformed, or adapted.”)

⁷⁰ Cf. House Comm. on the Judiciary, 89th Cong., Copyright Law Revision Part 6: Supplementary Report of the Register of Copyrights on the General Revision of the U.S. Copyright Law: 1965 Revision Bill 17 (Comm. Print 1965) (noting that while a broad reproduction right might render a separate derivative work right unnecessary, “omit[ting] any specific mention of it would be likely to cause uncertainty and misunderstanding.”). Some courts and commentators have even concluded that the derivative work right as currently interpreted is superfluous. See *Twin Peaks Prods. v. Publ’ns Int’l, Ltd.*, 996 F.2d 1366, 1373 (2d Cir. 1993); Michael Abramowicz, *A Theory of Copyright’s Derivative Work Right*, 90 MINN. L. REV. 317, 334–35 (2005); Jed Rubenfeld, *The Freedom of Imagination: Copyright’s Constitutionality*, 112 YALE L.J. 1, 50 (2002); MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON

downstream adaptation, it may not matter whether the accused work is analyzed under the reproduction right or the derivative work right.⁷¹

Conceptual redundancy aside, the range of non-literal copying that these exclusive rights cover leaves no doubt that “copyright law is intended to reach improvers as well as counterfeiters.”⁷² Subject to the fair use defense, downstream creators who invent new but unlicensed twists and turns on copyrighted material are infringers. Copyright law limits how these creators may construct their expression.

Some justify that limitation on natural rights grounds, appealing to theories of Lockean desert and Hegelian personhood interests.⁷³ Looking beyond the creator’s personal stake, however, what does society get out of restricting downstream use? The dominant utilitarian analysis has come to be known as copyright’s “incentives/access” tradeoff, weighing upstream incentives to create against downstream access to the work.⁷⁴ The standard case for derivative works exclusivity encompasses several arguments, all of which look upstream.⁷⁵ The first argument, which the Supreme Court emphasized in *Campbell v. Acuff-Rose Music, Inc.*, concerns whether the upstream creator will produce the original work to begin with.⁷⁶ Since derivative markets offer authors additional revenue streams on top of the primary market for the underlying work, giving them exclusive access to those derivative

COPYRIGHT § 8.09 [A] (2012). For a discussion of the infrequent instances in which the derivatives works right can do what the reproduction right cannot, see Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 1018 (1997).

⁷¹ See, e.g., *Well-Made Toy Mfg. Corp. v. Goffa Int’l. Corp.*, 354 F.3d 112, 117 (2d Cir. 2003) (noting that the same “substantial similarity” test applies whether the defendant’s product is analyzed as a reproduced work or a derivative work); *Litchfield v. Spielberg*, 736 F.2d 1352, 1357 (9th Cir. 1984) (stating that the derivative work standard examines whether the accused work “would be considered an infringing work if the material which it has derived from a prior work had been taken without the consent of a copyright proprietor of such prior work”).

⁷² Lemley, *supra* note 70, at 1019.

⁷³ See, e.g., Lawrence C. Becker, *Deserving to Own Intellectual Property*, 68 CHI.-KENT L. REV. 609, 610–11 (1993); Justin Hughes, *The Personality Interests of Artists and Inventors in Intellectual Property*, 16 CARDOZO ARTS & ENT. L.J. 81 (1998).

⁷⁴ See, e.g., LANDES & POSNER, *supra* note 3, at 11, 22–24, 66–67; Glynn S. Lunney, Jr., *Reexamining Copyright’s Incentives–Access Paradigm*, 49 VAND. L. REV. 483, 492–98 (1996). The “access” side of the tradeoff encompasses not just adaptive users interested in producing follow-on expression, but also non-adaptive users interested primarily in consuming the work. *Id.* at 495. Reading a book, listening to a song, and seeing a movie are each more expensive with copyright than without it. This Article focuses on adaptive access, the form most directly related to promotion of creativity. *But cf.* Jessica Litman, *Creative Reading*, 70 LAW & CONTEMP. PROBS. 175, 178–80 (2007) (arguing that reading, listening, and viewing are themselves acts of creativity).

⁷⁵ For a thorough overview of, and skeptical responses to, the arguments presented here, see Derek E. Bambauer, *Faulty Math: The Economics of Legalizing The Grey Album*, 59 ALA. L. REV. 345, 357–91 (2008).

⁷⁶ 510 U.S. 569, 593 (1994) (“[T]he licensing of derivatives is an important economic incentive to the creation of originals.”).

markets may spur investment in the underlying work.⁷⁷ A second argument asks not whether but when the upstream creator will produce the work. Without an exclusive adaptation right, perhaps the author of an original work will rush adaptations to market, even though society would be better off if she waited and gauged demand for the original.⁷⁸ On this theory, the derivative work right corrects potential distortions in the scheduling of derivative works' publication, what Michael Abramowicz has called "a tool that allows authors to take their time."⁷⁹ A third argument focuses on the copyright owner's ability to price discriminate.⁸⁰ By splintering the right to adapt a work from the right to copy it, copyright owners can name one price to ordinary consumers and another price to adapters, who may be willing to pay more. This allows owners to sort buyers according to their intended use, theoretically increasing revenue while minimizing deadweight loss.

So far, so good. But when attention shifts downstream, to the "access" side of the tradeoff, many commentators see a steep cost in the form of a less creative culture. They argue that, whatever the benefits occurring upstream, giving copyright owners more control over non-literal copying means getting less cultural innovation downstream.⁸¹ On this prevailing view, the incentives/access tradeoff is woefully lopsided. The need for access overwhelms the need for incentives. The upshot is that our regime is backwards. Instead of catalyzing creativity, copyright calcifies it. In a world that compensated creators adequately but nevertheless left downstream creators unconstrained, creativity would reach its full potential. But in our world of constraint, what might have been follow-on expression is never

⁷⁷ See, e.g., Jane C. Ginsburg, *Creation and Commercial Value: Copyright Protection of Works of Information*, 90 COLUM. L. REV. 1865, 1910–11 (1990) ("Potential derivative works exploitations are often taken into account in the decision whether to make the initial investment in a work's creation A broad scope of protection, thus, may favor the broader production of works."); Paul Goldstein, *Derivative Rights and Derivative Works in Copyright*, 30 J. COPYRIGHT SOC'Y U.S.A. 209 (1983) (arguing that copyright's derivative right "enables prospective copyright owners to proportion their investment in a work's expression to the returns expected not only from the market in which the copyrighted work is first published, but from other, derivative markets as well").

⁷⁸ See, e.g., LANDES & POSNER, *supra* note 2, at 110; Randal C. Picker, *Fair Use vs. Fair Access*, 31 COLUM. J.L. & ARTS 603, 613–14 (2007).

⁷⁹ Abramowicz, *supra* note 70, at 320.

⁸⁰ See, e.g., Michael J. Meurer, *Copyright Law and Price Discrimination*, 23 CARDOZO L. REV. 55, 75 (2001); Lunney, *supra* note 74, at 628–53.

⁸¹ See, e.g., Christina Bohannon, *Taming the Derivative Works Right: A Modest Proposal for Reducing Overbreadth and Vagueness in Copyright*, 12 VAND. J. ENT. & TECH. L. 669, 675; Molly Shaffer Van Houweling, *Distributive Values in Copyright*, 83 TEX. L. REV. 1535, 1566 (2005); *Warners Bros. Inc. v. Am. Broadcasting Co., Inc.*, 654 F.2d 204, 240 (2d Cir. 1981) (observing that although "[i]t is a fundamental objective of the copyright law to foster creativity," the substantial similarity inquiry's downstream effects have the capacity to "diminish the prospects for creativity.")

expressed.⁸² Copyright has become the law of missed opportunities.

A recurring trope in this discussion is the proposition that increasing creative choice inevitably increases creativity. That proposition drives a normatively intuitive case against limiting downstream use of protected information. An early evangelist is Richard Stallman, founder of the free software movement.⁸³ Larry Lessig introduced Stallman's ethos of unconstrained innovation to a broader audience in *Free Culture*, advocating for an intellectual property system in which "follow-on creators and innovators remain as free as possible from the control of the past."⁸⁴ The freer-is-better thesis is now a foundational tenet of contemporary skepticism toward copyright protection. Thus, Molly Van Houweling worries that "iterative creativity could be stifled by the mere expense of seeking and paying for permission to incorporate copyrighted expression into a new work."⁸⁵ Similarly, Wendy Gordon writes that creativity will have difficulty "surviving" the calculus of navigating licensing constraints,⁸⁶ Lydia Loren contends that licensing costs lead to the creation of works that are "not as culturally rich or as authentic as they could have been if the costs of reuse were lower,"⁸⁷ and Rebecca Tushnet argues that a "licensing regime will stifle creative practices" because creativity thrives best when "unpredictable and outside authors' control."⁸⁸ Similar versions of the argument abound.⁸⁹ Anthropologist Christopher Kelty perhaps best epitomizes this sentiment, albeit applied to

⁸² See LESSIG, *supra* note 5, at 104–06 (lamenting the "creativity [that] is never made just because the costs of clearing the rights are so high"); *id.* at 185–88; Olufunmilayo B. Arewa, *Copyright, Improvisation, and Risk: Copyright and Musical Innovation*, 86 NOTRE DAME L. REV. 1829, 1840 (2011) (arguing that today's copyright would have "inhibited creativity by composers such as Bach and Mozart," who "borrowed extensively in their works")

⁸³ See RICHARD M. STALLMAN, *FREE SOFTWARE, FREE SOCIETY: SELECTED ESSAYS* (RICHARD M. STALLMAN 32, 50 (2d ed. 2010)). *Cf.* Clark Asay, *The Case for the Public Domain*, 74 OHIO ST. L.J. 754, 755 (2013) (noting that the free software movement is based on the theory that "freedom of use fosters increased collaboration, which in turn spurs inventive and creative activity").

⁸⁴ LESSIG, *supra* note 5, at xiv.

⁸⁵ Houweling, *supra* note 6, at 1566.

⁸⁶ Wendy J. Gordon, *Authors, Publishers, and Public Goods: Trading Gold for Dross*, 36 LOY. L.A. L. REV. 159, 191 (2002).

⁸⁷ Loren, *supra* note 6, at 14.

⁸⁸ Rebecca Tushnet, *Economies of Desire: Fair Use and Marketplace Assumptions*, 51 WM. & MARY L. REV. 513, 542–43 (2009).

⁸⁹ *E.g.*, Laura A. Heymann, *The Trademark/Copyright Divide*, 60 S.M.U. L. REV. 55, 85 (2007) (recounting the prevailing view that restrictions on the public domain are necessarily "restrictions on creativity" and that "[a] creator who has some limitations on the 'raw materials' he can use to create is thwarted in the creative process."); Cohen, *supra* note 2, at 1191–92 (arguing that the creative process demands broad freedom in order to generate the unexpected); Wendy J. Gordon, *A Property Right in Self-Expression: Equality and Individualism in the Natural Law of Intellectual Property*, 102 YALE L.J. 1533, 1570 (1993) (concluding that copyright restrictions render some downstream creators "unable to create" and therefore advocating for a "a freedom inconsistent with first creators' property rights").

technological innovation, in his opening statement at a recent debate on the patent system: “What is the oxygen of innovation? What is it that keeps innovation alive from moment to moment and what is it that can be stifling? I submit that the oxygen of innovation is freedom. Freedom to operate, freedom to experiment, freedom from constraint and control, freedom to fail.”⁹⁰ On this now-conventional account, any restriction on downstream use of information is at best a necessary—and significant—evil for the creation of expressive works.

B. *Inventing Around and Creating Around*

Patent theory offers a more optimistic view of the relationship between creativity and constraint. Courts and commentators have recognized the process of inventing around patents as a generative source of, rather than a stifling impediment to, creativity. One of the earliest and most enthusiastic proponents was Judge Evan Alfred Evans of the Court of Appeals for the Seventh Circuit. In a pair of cases from the early 1940s, he endorsed inventing around as an engine of competition that ultimately hastens the progress of science.

First, in *James P. Marsh Corp. v. U.S. Gauge Co.*, the court was faced with a defendant who had tried to invent around a patented component of a steam pressure gauge.⁹¹ The accused device successfully performed the patented invention’s function while omitting one of the elements disclosed in the patent claims.⁹² The lower court had held that the defendant’s device, although beyond the literal scope of the claims, nevertheless infringed under the doctrine of equivalents.⁹³ The Court of Appeals reversed. Writing for the court, Judge Evans posited that the patent system “spurs the competitors to put forth their mightiest effort to produce a product as good, yet different from the patentee’s.” He noted that this circumvention effort often absorbs as much creative energy as “the conception or development of invention itself.” When such redirection of effort occurs, “the patent system is working at its best. For it is then that we have competition between a holder of a legal monopoly and his competitors. It illustrates how the legal monopoly evidenced by a patent excites the competitors to their best to meet or excel the product covered by the existing patent.”⁹⁴

Six months later, in *Chicago Steel Foundry Co. v. Burnside Steel Foundry Co.*,

⁹⁰ *Patent Pending Event: Does the U.S. Patent System Stifle Innovation? An Oxford-Style Debate*, (Nov. 12, 2013), <https://www.youtube.com/watch?v=H-RFwTCi9Nc> (statement beginning at 11:02).

⁹¹ 129 F.2d 161 (7th Cir. 1942).

⁹² *Id.* at 165.

⁹³ 42 F. Supp. 998 (N.D. Ill. 1941).

⁹⁴ *James P. Marsh Corp.*, 129 F.2d at 164–65.

Judge Evans again wrote a decision overturning an infringement judgment, this time holding the patent-in-suit invalid for obviousness.⁹⁵ Although the accused infringer had done nothing to invent around the patented invention and the sole issue was the patent's validity, Judge Evans offered the following admitted "digression" to justify the existence of the patent system:

[A]n inventor brings forth an apparatus which is better and made at less cost than anything heretofore made or used in this field. All competitors are threatened with loss and perhaps ruin if an equally good product is not made and sold at prices which meet the new patented product. At once, the inventive and creative talents of competitors are aroused. They are spurred to their best efforts to produce, not merely as good, but a better, product, by a new, non-infringing method or apparatus. Thus, instead of displaying monopolistic traits, the patent fosters competition among inventors and begets new and better products at lesser costs. As a result the public is the beneficiary.⁹⁶

Other proponents focus less on easily identified sequential improvement and more on the need to differentiate potential solutions. William Davis, Chairman of the Department of Commerce's Patent Survey Committee, applauded the patent system's "enforced diversity of innovation" in congressional testimony before the Special Committee on Atomic Energy in 1946.⁹⁷ Opposing a proposed compulsory licensing system for all inventions utilizing atomic energy, Davis analogized innovation to a mining prospect and argued that the best way to develop the prospect would be to diversify search routes. In an uncertain territory, it is efficient to instruct each member of the search team

not [to] follow in anybody else's footsteps; wherever you see footsteps turn aside and go somewhere else²—because the natural tendency of mankind is partly 'sheepish'. . . they like to follow other people's footsteps.

The effect of the patent system in what we might call the lower levels of invention is to force diversity. A is a manufacturer of can openers; B is a competitor. B comes along with a new type of can opener. He gets a patent on it. A can't copy it, but he still has to stay in the can-opener business, so he gets busy and gets himself up some new type of can opener, and it is usually a

⁹⁵ 132 F.2d 812 (7th Cir. 1943).

⁹⁶ *Id.* at 816.

⁹⁷ Testimony of William Davis, *Hearings Before the Special Committee on Atomic Energy on S. 1717*, Pt. 1, 79th Cong., 2d sess., 61 (1946). The mining metaphor would prove to be a recurring one in patent scholarship. See Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265 (1977) (arguing that broad patent scope is preferable because it allows the patentee to develop an innovation "prospect" without rent dissipation from competitors, just as property rights over physical prospects reduce rent dissipation during a gold rush).

little better than B's.⁹⁸

The force of Davis's theory does not depend on sequential improvement. A competing inventor may indeed surpass the patentee, as Davis envisioned in his can opener hypothetical, but that point is secondary. More important is that inventing around increased the number of proposed solutions. In an uncertain environment where the optimal solution isn't known *ex ante*, a diverse set of solutions ensures the greatest chance of success.⁹⁹ Thus, even if hindsight reveals that an invent-around product failed to improve on a particular patented invention, the system that generated the invent-around is still serving a useful purpose. Judge Giles Rich, often considered the father of modern patent law, would later speak of these two benefits as "improvement" and "enrichment."¹⁰⁰ The latter increases the odds of the former by multiplying the range of alternatives.

Many contemporary commentators have agreed that innovation is improved under a mandatory differentiation mechanism in a problem space large enough to accommodate differentiation.¹⁰¹ They are joined by the Court of Appeals for the Federal Circuit, which in multiple decisions has cited inventing around as a social benefit of the patent system.¹⁰² There is some soft

⁹⁸ *Id.*

⁹⁹ The classic argument in favor of diverse R&D investments under uncertainty is Richard R. Nelson, *Uncertainty, Learning, and the Economics of Parallel Research and Development Efforts*, 43 REV. ECON & STAT. 351 (1961).

¹⁰⁰ Giles S. Rich, *Principles of Patentability* (1960), reprinted in 14 FED. CIR. B.J. 135, 140–41 (2004).

¹⁰¹ See, e.g., Mark A. Lemley, *The Myth of the Sole Inventor*, 110 MICH. L. REV. 709, 753–54 & n.248 (2012); F. SCOTT KIEFF ET AL., PRINCIPLES OF PATENT LAW 71 (4th ed. 2008); Oskar Liivak, *Maintaining Competition in Copying: Narrowing the Scope of Gene Patents*, 41 U.C. DAVIS L. REV. 177, 214 (2007); Matthew J. Conigliaro et al., *Foreseeability in Patent Law*, 16 BERKELEY TECH. L.J. 1045, 1051 (2001); Craig Allen Nard, *A Theory of Claim Interpretation*, 14 HARV. J. L. & TECH. 1, 40 (2000). For a particularly extensive discussion, see Staff of the Subcomm. on Patents, Trademarks, and Copyrights of the Senate Comm. on the Judiciary, 84th Cong., 2d Sess., *The Patent System and the Modern Economy* 18–19 (Comm. Print 1957) (Study No. 2) (George E. Frost) (arguing that "the most experienced workers often do not explore what ought to be explored and doggedly adhere to the thinking of the past," that "society must positively compel the exploration of alternatives," and that the patent successfully performs this function because "[e]xisting concerns are forced—upon pain of payment of royalties or even foreclosure from a successful development—to explore all alternatives with an open mind.").

¹⁰² See, e.g., *Hilton Davis Chem. Co. v. Warner-Jenkinson Co., Inc.*, 62 F.3d 1512, 1520 (Fed. Cir. 1995) *supplemented*, 64 F.3d 675 (Fed. Cir. 1995) *and rev'd on other grounds*, 520 U.S. 17; *Westvaco Corp. v. Int'l Paper Co.*, 991 F.2d 735, 745 (Fed. Cir. 1993); *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 828 (Fed. Cir. 1992); *Slimfold Mfg. Co. v. Kinkead Indus, Inc.*, 932 F.2d 1453, 1457 (Fed. Cir. 1991) (Rich, J.); *State Indus., Inc. v. A.O. Smith Corp.*, 751 F.2d 1226, 1235–36 (Fed. Cir. 1985); *Yarway Corp. v. Eur-Control USA, Inc.*, 775 F.2d 268, 277 (Fed. Cir. 1985); see also *Baxter Int'l v. Abbott Labs.*, 315 F.3d 829, 830 (7th Cir. 2003) (describing a patentee's successful manufacturing process that gave a competitor the "incentive to invent

empirical support for this theory. In 1959, the Patent Law Association of Los Angeles surveyed its clients as to the frequency and effects of inventing around.¹⁰³ Of 282 respondents, 57% said they had attempted to design around another's patent.¹⁰⁴ Of these respondents, 61% reported that they had obtained results superior to the patented invention, and an additional 26% reported that they had obtained items equal in merit. Only 13% reported coming up with inferior devices. Separately, 75% reported that invent-around efforts had opened up new fields of R&D, and 78% made additional inventions during the course of those efforts.¹⁰⁵ A more recent survey indicates that inventing around remains prevalent.¹⁰⁶ Anecdotal success stories include the VCR, which was the result of an attempt to circumvent the then-dominant video recording technology;¹⁰⁷ several recent advances in three-dimensional printing;¹⁰⁸ the fluid catalytic cracking process used in modern petroleum production;¹⁰⁹ Zantac, the blockbuster histamine-2 blocker that increased the half-life and decreased the toxicity of its predecessor, Tagamet;¹¹⁰ inkjet printing;¹¹¹ chemical vapor deposition, invented in the course of designing around Edison's patent on the carbon filament light bulb;¹¹² and,

around" it, eventually inventing a process that was "distinct . . . but equivalently cheap and effective").

¹⁰³ Russell M. Otis & William Douglass Sellers, *Our Patent System Works: A Reply to the Melman Report*, 42 J. PAT. OFF. SOC'Y 295, 324–25 (1960).

¹⁰⁴ This was defined as "develop[ing] a directly competitive item not covered by the patent." *Id.*

¹⁰⁵ *Id.*

¹⁰⁶ Edwin Mansfield et al., *Imitation Costs and Patents: An Empirical Study*, 91 ECON. J. 907, 913 (1981); see also C.T. TAYLOR & Z.A. SILBERSON, *THE ECONOMIC IMPACT OF THE PATENT SYSTEM: A STUDY OF THE BRITISH EXPERIENCE 183–84* (1973) (reviewing survey data from British inventors showing prevalence of inventing around); Jessica Silbey, *Patent Variation: Discerning Diversity Among Patent Functions*, 45 LOY. U. CHI. L.J. 441, 464–65 & n.58 (2013) (providing data from qualitative interviews with inventors and patent attorneys who embrace inventing around as a source of scientific progress).

¹⁰⁷ Richard S. Rosenbloom & Michael A. Cusumano, *Technological Pioneering and the Birth of Competitive Advantage: The Birth of the VCR Industry*, 29 CAL. MGMT. REV. 51, 57–58 (1987).

¹⁰⁸ Melba Kurman & Hod Lipson, *Why Patents Won't Kill 3D-Printing Innovation*, LIVESCIENCE, Jul. 29, 2013, <http://www.livescience.com/38494-3d-printing-and-patent-protection.html>.

¹⁰⁹ NEWTON COPP & ANDREW ZANNELLA, *DISCOVERY, INNOVATION, AND RISK: CASE STUDIES IN SCIENCE AND TECHNOLOGY 186–88* (1993); Amos Avidan, et al., *Innovative Improvements Highlight FCC's Past and Future*, OIL & GAS J., Jan. 8, 1990, at 33.

¹¹⁰ JIE JACK LI, *BLOCKBUSTER DRUGS: THE RISE AND DECLINE OF THE PHARMACEUTICAL INDUSTRY 30–33* (2014).

¹¹¹ Hal R. Varian & Joseph V. Farrell, *The Economics of Information Technology: An Introduction 26–27*; Testimony of Hal Varian, *Federal Trade Commission Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy 94* (Feb. 25, 2002).

¹¹² Lemley, *supra* note 101, at 754; Ron D. Katznelson & John Howells, *Inventing-Around Edison's Incandescent Lamp Patent: Evidence of Patents' Role in Stimulating Downstream Development and Competition* 19 (unpublished manuscript), <http://works.bepress.com/cgi/>

according to some, the high-pressure steam engine, a previously abandoned (and, as it would turn out, superior) technology revived only in response to a dominant patent over low-pressure systems.¹¹³

There is another way to characterize the improvement and enrichment benefits ascribed to inventing around: creativity under constraint. The differentiated inventions that result from circumventing a patent are, to varying degrees, original and appropriate solutions—creative solutions—to the same ill-structured problem that the patented invention targeted. Downstream inventors devise those solutions because of patent constraints upstream. Indeed, creativity lies at the heart of the court’s theory in *Chicago Steel Foundry*, which reasoned that the patentee’s exclusive control “arouse[s]” the “inventive and creative talents of competitors.”¹¹⁴ Inventing around, then, complicates the argument that more creative choice always means more creativity. Constraint can spur creativity, too.

To be sure, inventing around has its critics among patent scholars.¹¹⁵ Some think that it’s more trouble than it’s worth. Society may win, they argue, where an invent-around happens to yield a genuinely promising alternative solution. The problem is that the circumventing invention may be no better, either in immediate impact or in fertility for future research, than the circumvented one. Where that’s the case, the downstream inventor has simply reinvented the wheel, often at considerable R&D cost. On this account, the duplicative effort expended to invent around the patent is socially wasteful. Moreover, even where the effort yields a meaningfully different product, perhaps those R&D resources would have been better allocated to solving yet unsolved problems, rather than to solving already solved ones in different ways.¹¹⁶

Whether one thinks inventing around improves social welfare depends on whether one expects the enrichment and improvement benefits to dominate the cost of redundant effort.¹¹⁷ There is good reason to suspect that

viewcontent.cgi?article=1073&context=rkatznelson.

¹¹³ George Selgin & John L. Turner, *Strong Steam, Weak Patents, or the Myth of Watt’s Innovation-Blocking Monopoly, Exploded*, 54 J. L. & Econ. 841 (2011). *But see* Joel Mokyr, *Technological Change, 1700-1810*, in 1 AN ECONOMIC HISTORY OF BRITAIN SINCE 1700 24 (2d ed. 1994) (providing historical account, refuted by Selgin and Turner, that the patentee succeeded in blocking development of the high-pressure steam engine during the life of the patent)

¹¹⁴ 132 F.2d at 816.

¹¹⁵ *See, e.g.*, Michael Abramowicz, *Perfecting Patent Prizes*, 56 VAND. L. REV. 115, 190–91 (2003); Louis Kaplow, *The Patent-Antitrust Intersection: A Reappraisal*, 97 HARV. L. REV. 1813, 1869 (1984); Donald F. Turner, *The Patent System and Competitive Policy*, 44 N.Y.U. L. REV. 450, 455 (1969); Fritz Machlup, *An Economic Review of the Patent System*, Study No. 15, Subcomm. on Patents, Trademarks, & Copyrights, S. Comm. on the Judiciary, 85th Cong., 2d Sess. 1, 50–51 (Comm. Print 1958).

¹¹⁶ *See* Machlup, *supra* note 115, at 51.

¹¹⁷ *See* Kevin Emerson Collins, *Getting Into the “Spirit” of Innovative Things: Looking to*

it does.¹¹⁸ Even if it doesn't, however, the criticism is beside the point. The worry is not that inventing around is an ineffective creative stimulus. The worry is that inventing around is an expensive creative stimulus. Even taking seriously the concern over duplicative investment, circumventing patent constraint remains a generative source of original and appropriate solutions to technological problems.

The copyright literature has mostly neglected a comparable "creating around" theory of expression. Instead, as the previous Section explained, it treats external restraint as fundamentally inimical to creativity. Forcing detours around the copyrighted work doesn't arouse the "creative talents" to which Judge Evans referred in the patent context. Rather, in Judge Easterbrook's words, it only "slows progress in literature and art . . . forcing authors to re-invent the wheel."¹¹⁹ Copyright theory, far more than patent theory, has romanticized limitlessness. That romance obviates the need to account for the generative limits that patent jurisprudence has historically underscored. When constraint is conceptualized as creativity's opposite, it is hard to have anything good to say about it. One might support the constraint's corresponding upstream incentives, perhaps, but not the constraint itself.

Still, a few scholars have tried. Justin Hughes has argued that by allowing downstream creators to "borrow some, but not borrow too much, intellectual property laws force creators to express themselves by differentiating themselves from what has come before."¹²⁰ That differentiation, according to Hughes, enriches culture in the long run. Polk Wagner briefly notes a comparison to inventing around in positing that constraint can induce expression of new information.¹²¹ Landes and Posner conjecture that, but for copyright excludability, famous works could be subject to "congestion externalities" that would destroy their cultural salience over time.¹²² Thus, imitative copyists might oversaturate society with the Mona Lisa

Complementary and Substitute Properties to Shape Patent Protection for Improvements, 26 BERKELEY TECH. L.J. 1217, 1294 n.275 (2011) (noting the "robust debate" on the social value of inventing around).

¹¹⁸ See Lemley, *supra* note 101, at 753 (arguing that concerns over duplicative investment overstate the likelihood that competitors will "achieve the same end in the same way").

¹¹⁹ *Nash v. CBS, Inc.*, 899 F.2d 1537, 1540 (7th Cir. 1990). Other courts have condoned creating around without taking a position on its welfare effects. See, e.g., *Eden Toys, Inc. v. Marshall Field & Co.*, 675 F.2d 498, 501 (2d Cir. 1982) ("Even if an alleged copy is based on a copyrighted work, a defendant may legitimately avoid infringement by intentionally making sufficient changes in a work which would otherwise be regarded as substantially similar to that of the plaintiffs's.").

¹²⁰ Justin Hughes, *Recoding Intellectual Property and Overlooked Audience Interests*, 77 TEX. L. REV. 923, 981 (1999).

¹²¹ R. Polk Wagner, *Information Wants to be Free: Intellectual Property and Other Mythologies of Control*, 103 COLUM. L. REV. 995, 1008–09 (2003).

¹²² LANDES & POSNER, *supra* note 3, at 222–28.

and Mickey Mouse, to the point where those cultural goods lose their value.¹²³ To guard against that possibility, they contend, copyright properly limits the public's ability to appropriate those goods. Abramowicz notes a separate economic cost of crowding around the same expressive works, focusing on the wasteful rent dissipation that would result from over-entry if derivative markets were left open to all.¹²⁴

These analyses are the optimistic exceptions to the rule. None of them, however, has asked whether constraint can aid creativity. This Article is the first to do so. It moves beyond others' rational actor models that suppose if we only ratchet up the disincentives to copy, then downstream creators will find some other way to solve the problem, or maybe some better problem to solve. That approach runs right back into the constraint critique. Supply and demand curves, critics have stressed, do not describe how creativity works.¹²⁵ According to them, disincentives don't redirect creativity. They kill it. If that much is true, copyright maximalists interested in promoting a creative culture are on a fool's errand. So long as creativity withers when constrained and thrives when set free, any creativity policy that constrains creators is self-defeating.

What is needed, then, is a better understanding of how the creative mind responds to the imposition of limits. Perhaps creators always need the widest possible berth of choice to let the imaginative process play out. Or, as the next Part details, perhaps not.

III. CONSTRAINT AS A SOURCE OF CREATIVITY

Pablo Picasso once stated that “[f]orcing yourself to use restricted means is the sort of restraint that liberates invention. It obliges you to make a kind of progress that you can't even imagine in advance.”¹²⁶ The theme that constraint generates creativity runs through many creators' introspections on the process of making culture. Poet Paul Valéry wrote that restrictions “often encourage inventions that would never have resulted from complete freedom.”¹²⁷ André Gide, a Nobel Prize laureate in literature, continued the passage excerpted in this Article's epigraph by noting that “[a]rt aspires to liberty only in periods of sickness; it would like an easy life. Every time it feels vigorous, it looks for a struggle and an obstacle. . . . Art is born of constraint,

¹²³ *Id.* at 225–26.

¹²⁴ Abramowicz, *supra* note 70.

¹²⁵ See, e.g., Diane Leenheer Zimmerman, *Copyright as Incentives: Did We Just Imagine That?*, 12 THEORETICAL INQ. L. 29 (2011); Tushnet, *supra* note 88, at 522–36; Cohen, *supra* note 2, at 1193.

¹²⁶ FRANCOISE GILOT & CARLTON LAKE, LIFE WITH PICASSO 57 (1964).

¹²⁷ Paul Valéry, *The Opening Lecture of the Course in Poetics*, in 13 COLLECTED WORKS OF PAUL VALÉRY 91 (1964).

lives on struggle, dies of freedom.”¹²⁸ Composer Igor Stravinsky similarly remarked, “My freedom will be so much the greater and more meaningful the more narrowly I limit my field of action and the more I surround myself with obstacles. Whatever diminishes constraint, diminishes strength. The more constraints one imposes, the more one frees one’s self of the chains that shackle the spirit.”¹²⁹ And philosopher Eric Hoffer observed that constraint breeds novelty, concluding that “[a] society which gives unlimited freedom to the individual, more often than not attains a disconcerting sameness. On the other hand, where communal discipline is strict but not ruthless . . . originality is likely to thrive.”¹³⁰

Early psychological theories of creativity contradicted this view. Like today’s copyright scholarship, they conceptualized freedom as a vehicle for creativity and constraint as a vehicle for conformity.¹³¹ This perspective set up a negative linear relationship between limitations and creative output. More of the former means less of the latter. Characteristic of this view was Morris Stein’s statement in 1961 that “[s]ocieties that are full of ‘don’ts,’ shouldn’ts,’ and ‘mustn’ts’” discourage creativity because they “restrict freedom of inquiry and autonomy.”¹³² In the 1980s, Teresa Amabile incorporated this freedom-centered conception of creativity into a model based on creators’ “intrinsic motivation.”¹³³ Her thesis, which has greatly influenced subsequent creativity scholarship, is that people are more creative when motivated primarily by innate interest in the task, rather than a goal imposed by others.¹³⁴ Because freedom and personal autonomy increase intrinsic motivation, it follows that they also increase creativity.¹³⁵ Amabile theorized that without the intrinsic

¹²⁸ GIDE, *supra* note 1, at 263.

¹²⁹ IGOR STRAVINSKY, *POETICS OF MUSIC IN THE FORM OF SIX LESSONS* 65 (Arthur Knodel & Ingolf Dahl trans., 2000).

¹³⁰ ERIC HOFFER, *THE PASSIONATE STATE OF MIND* 33 (1955).

¹³¹ R. KEITH SAWYER, *EXPLAINING CREATIVITY: THE SCIENCE OF HUMAN INNOVATION* 17–18 (2d ed. 2012).

¹³² MORRIS STEIN, *CONTEMPORARY PSYCHOTHERAPIES* 130 (1961); *see also id.* at 119 (“To be capable of [creativity], the individual requires freedom—freedom to explore, freedom to be himself, freedom to entertain ideas no matter how wild and to express that which is within him without fear of censure or concern about evaluation.”).

¹³³ *See* AMABILE, *supra* note 28, at 15; Amabile, *supra* note 29, at 91; Teresa M. Amabile, *A Model of Creativity and Innovation in Organizations*, 10 *RES. ORG. BEHAV.* 123 (1988).

¹³⁴ On the intrinsic motivation model’s influence, see Brent D. Rosso, *Creativity and Constraints: Exploring the Role of Constraints in the Creative Processes of Research and Development Teams*, 35 *ORG. STUDIES* 551, 553 (2014).

¹³⁵ The groundwork is Deci and Ryan’s Self-Determination Theory, which relates intrinsic motivation to self-perceptions of freedom. *See* EDWARD L. DECI & RICHARD M. RYAN, *INTRINSIC MOTIVATION AND SELF-DETERMINATION IN HUMAN BEHAVIOR* 49 (1985); Edward L. Deci & Richard M. Ryan, *The Empirical Exploration of Intrinsic Motivational Processes*, in 13 *ADVANCES IN EXPERIMENTAL SOCIAL PSYCHOLOGY* 39 (Leonard Berkowitz ed., 1980); Edward L. Deci, *Effects of Externally Mediated Rewards on Intrinsic Motivation*, 18 *J. PERSONALITY & SOC. PSYCHOL.* 105 (1971).

motivation that limitlessness affords, creators are wont to fall back on familiar routines. Creativity, then, must abhor external directives.¹³⁶

Since the early 1990s, however, empirical evidence has been mounting that, contrary to the freer-is-better account, certain forms of constraint in fact enhance creativity. Interestingly, Amabile's current views are not necessarily to the contrary. She has recently observed that constraint may indeed foster creativity where resources are sufficient to satisfy the constraint and the rules are both clear and challenging.¹³⁷ External constraint and intrinsic motivation need not be incompatible. Picasso, Valéry, Gide, Stravinsky, and Hoffer may have been on to something after all.

This Part discusses psychologists' case for constraint's generative upside. Part III.A examines the basic cognitive mechanisms that make problem finders and solvers creative. It introduces what some psychologists have called the Path of Least Resistance theory, in which limiting access to familiar solutions enhances creative cognition. Part III.B reviews the burgeoning empirical evidence that certain forms of constraint enhance creativity.

A. Creativity and the Path of Least Resistance

The basic intuition underlying constraint's emergence as a positive force in creativity theory is a story of overabundance. The more resources one has, the easier it is to find and solve a problem in a manner that imitates a prior exemplar. Some freedom is critical, but too much of it invites stasis.¹³⁸

This phenomenon stems from creativity's cognitive mechanisms. According to the influential model developed by Ronald Finke and his colleagues, problem solving occurs over the course of two phases.¹³⁹ In the initial "generative" phase, an individual develops "preinventive structures," loose mental representations such as verbal combinations or visual images that

¹³⁶ AMABILE, *supra* note 28, at 120, 176–77, 267; *see also* Rosso, *supra* note 134, at 553–54 (summarizing Amabile's conclusions).

¹³⁷ Teresa Amabile & Steve Kramer, *Necessity, Not Scarcity, Is the Mother of Invention*, HBR BLOG NETWORK (Mar. 25, 2011, 10:42 AM), <http://blogs.hbr.org/2011/03/necessity-not-scarcity-is-the/>. I return to Amabile's important caveats in Part IV.

¹³⁸ *See* MIHÁLY CSÍKSZENTMIHÁLYI, CREATIVITY: FLOW & THE PSYCHOLOGY OF DISCOVERY & INVENTION 332 (1996) (concluding that "too many resources can have a deadening effect on creativity").

¹³⁹ *See* RONALD A. FINKE, ET AL., CREATIVE COGNITION: THEORY, RESEARCH, AND APPLICATIONS 17–19 (1992); Thomas B. Ward, et al., *Creative Cognition*, in HANDBOOK OF CREATIVITY 189, 191–93 (Robert J. Sternberg ed., 1999); Steven M. Smith, et al., *Constraining Effects of Examples in a Creative Generation Task*, 21 MEMORY & COGNITION 837, 837 (1993). While others have further divided creative cognition into additional steps, *see, e.g.*, Mark A. Runco & Ivonne Chand, *Cognition and Creativity*, 7 EDUC. PSYCH. REV. 243 (1995), the basic framework is similar. *See* Thomas B. Ward, *Cognition, Creativity, and Entrepreneurship*, 19 J. BUS. VENTURING 173, 175 (2004) (noting compatibility between models).

serve as potential precursors to a solution.¹⁴⁰ He may retrieve these structures directly from memory, synthesize them by combining other structures, or transfer them analogically from another domain.¹⁴¹ These structures are necessarily incomplete, sometimes no more than “a mere germ of an idea.”¹⁴² This is where the second, “exploratory” phase comes in. The individual explores and interprets these structures, feeling out their suitability as solutions to the problem.¹⁴³ If that process doesn’t yield a satisfactory solution on the first try, the individual will shuttle back and forth between generating and exploring preinventive structures, updating those structures with the feedback from each cycle until a solution emerges.¹⁴⁴

The constraints that govern the appropriateness of the solution affect the structures that individuals will retrieve during the creative process.¹⁴⁵ If there are few constraints, most individuals by default seek out a prior successful exemplar and work in a top-down fashion to conform the solution to it.¹⁴⁶ Following this path of least resistance inhibits originality, and hence creativity, by launching a mimetic approach to problem solving. The ultimate product will closely resemble the exemplar from which it sprang.¹⁴⁷ Whether the creator is conscious of it or not, there has been a powerful cognitive constraint at work all along: the exemplar itself.¹⁴⁸

Increasing the amount of constraint that the individual must satisfy breaks the mimetic cycle. Constraint makes it more difficult to retrieve a fully-formed exemplar that will remain appropriate to the task.¹⁴⁹ As a result, preinventive structures grow more abstract and less likely to conjure up a previous solution.¹⁵⁰ Rather than conform a solution to an already well-developed model, the individual must instead consult broader knowledge frameworks and engage in the sort of conceptual synthesis and analogy that tend to produce original ideas.¹⁵¹

This approach to creative cognition has come to be known as the Path

¹⁴⁰ FINKE, et al., *supra* note 139, at 17.

¹⁴¹ *Id.*

¹⁴² Ward, et al., *supra* note 130, at 191.

¹⁴³ FINKE, et al., *supra* note 139, at 17.

¹⁴⁴ *Id.*

¹⁴⁵ Thomas B. Ward, *Structured Imagination: The Role of Category Structure in Exemplar Generation*, 27 COGNITIVE PSYCH. 1, 35–36 (1994); Ward, *supra* note 130, at 183–84.

¹⁴⁶ Ward, *supra* note 145, at 36; Ward, *supra* note 130, at 183; C. Page Moreau & Darren W. Dahl, *Designing the Solution: The Impact of Constraint on Consumers’ Creativity*, 32 J. CONSUMER RESEARCH 13, 15 (2005); Stokes, *supra* note 23, at 108; Patricia D. Stokes, *Constraints and Creativity: Experiments in Art and Psychology*, in HANDBOOK OF POLICY CREATIVITY: CREATIVITY FROM DIVERSE PERSPECTIVES 43 (Stuart S. Nagel ed., 2001).

¹⁴⁷ Ward, *supra* note 145, at 36; Ward, *supra* note 130, at 183.

¹⁴⁸ Ward, *supra* note 130, at 183; Stokes, *supra* note 23, at 108.

¹⁴⁹ Stokes, *supra* note 23, at 108.

¹⁵⁰ FINKE, et al., *supra* note 139, at 31; Ward, *supra* note 145, at 36.

¹⁵¹ Ward, *supra* note 145, at 36.

of Least Resistance theory.¹⁵² To be sure, there's nothing inherently wrong with following the path of least resistance, as Thomas Ward, the theory's pioneer, has emphasized.¹⁵³ Conforming solutions to prior exemplars is, in fact, a perfectly efficient way to approach many problems. But it's not a terribly effective route to originality. And where the problem solver transfers aspects of the exemplar to a new context where they are unnecessary or detrimental to the solution, it's not an effective route to appropriateness, either.¹⁵⁴ In the 1970s, for example, Sony abandoned plans for the CD on the ground that an LP-sized digital disc would hold far more music than most consumers would be willing to pay for. Apparently, the thought of creating a smaller disc hadn't occurred to its engineers.¹⁵⁵ Sony realized its error only when it saw another firm using smaller discs. That error, according to Ward, was probably the product of path-of-least-resistance thinking. Cognitively, then, creativity is better off under constraints that encourage a more abstract approach.¹⁵⁶

The next Section describes in greater detail a few of the significant empirical studies that show the theory at work.¹⁵⁷ They demonstrate that too little constraint is as bad for creativity as too much, and that some constraints lead to more creativity than others.

B. Empirical Studies

1. Creative Invention Experiments

In 1990, Finke conducted a pioneering study of creativity under constraint.¹⁵⁸ In a series of controlled experiments, participants were shown a set of fifteen basic component shapes, including both simple pieces like a sphere or a cylinder and more specialized pieces like a hook or a handle. They were then asked to design a useful object using exactly three of those shapes.

¹⁵² See, e.g., Steven M. Smith & Thomas J. Ward, *Cognition and the Creation of Ideas*, in THE OXFORD HANDBOOK OF THINKING AND REASONING 459 (Keith J. Holyoak & Robert J. Morrison eds., 2012).

¹⁵³ Ward, *supra* note 130, at 184.

¹⁵⁴ *Id.* at 185.

¹⁵⁵ *Id.* at 175.

¹⁵⁶ *Id.* at 185.

¹⁵⁷ For other empirical work not discussed here, see Roy Yong-Joo Chua & Sheena S. Iyengar, *Creativity as a Matter of Choice: Prior Experience and Task Instruction as Boundary Conditions for the Positive Effect of Choice on Creativity*, 42 J. CREATIVE BEHAVIOR 164 (2008); Jacob Goldenberg, et al., *Creative Sparks*, SCIENCE, Sept. 3, 1999, at 1495. An extensive literature review can be found in C. Page Moreau & Darren W. Dahl, *Constraints and Consumer Creativity*, in TOOLS FOR INNOVATION: THE SCIENCE BEHIND THE PRACTICAL METHODS THAT DRIVE NEW IDEAS 104 (Arthur B. Markman & Kristin L. Wood eds., 2009).

¹⁵⁸ RONALD FINKE, CREATIVE IMAGERY: DISCOVERIES AND INVENTIONS IN VISUALIZATION 39–82 (1990).

In an experimental group, participants were randomly assigned their shapes. In a control group, participants could choose any shapes they liked.

In all groups, participants were given potential categories of objects, such as furniture, toys, or scientific instruments. After they had finished, a blind panel of judges rated each invention according to its originality and appropriateness, creativity's constituent parts. Any object that was rated sufficiently appropriate and original was deemed a creative invention.¹⁵⁹

In the first study, Finke compared the creativity ratings under three different conditions: (1) the category was random but the parts were chosen, (2) the category was chosen but the parts were random, and (3) both the category and the parts were random. Finke found that the group that was randomly assigned both category and object part designed the greatest number of creative inventions, while the group that was free to choose their own object parts generated the fewest creative inventions.¹⁶⁰ The appropriateness of the inventions remained roughly constant across experimental conditions—it was only originality that differed.¹⁶¹ Finke hypothesized that being forced to think in unconventional ways about objects and their uses increased creativity.¹⁶²

A second study added a variation to the experimental conditions.¹⁶³ One group was assigned not only object categories, but also specific object *types* within those categories (*e.g.*, in the furniture category, a subject would be further constrained to designing a chair). Another group was instead assigned a specific *function* for the object (*e.g.*, in the furniture category, a subject would be further constrained to designing something that could be used by the disabled). The results demonstrated that certain constraints are less productive than others. The group that had been assigned an object function produced about as many creative inventions as the group from the first study that could choose any function. By contrast, the group that had been assigned an object type produced fewer than half as many creative inventions as the group from the first study.¹⁶⁴

Finke concluded that as an assigned object grew more specialized, it became more difficult to design using randomly selected parts. A broad category like furniture gives enough room for novel structures that remain useful, but a narrower category contains necessary elements too specific to be satisfied.¹⁶⁵ The sweet spot was a bounded, but not too bounded, inventive territory.

¹⁵⁹ *Id.* at 44.

¹⁶⁰ *Id.* at 45.

¹⁶¹ *Id.*

¹⁶² FINKE, ET AL., *supra* note 139, at 69.

¹⁶³ FINKE, *supra* note 158, at 63–81.

¹⁶⁴ *Id.* at 67.

¹⁶⁵ *Id.* at 81.

Finke's studies were some of the first experimental evidence that an incremental increase in restrictions could increase creative output. Notably, however, the experiments did not include a control group in which both category and object parts could be freely chosen, which Finke considered to be "trivially unconstrained."¹⁶⁶ To those who believe maximum creative choice yields maximum creativity, the matter may not be so trivial. The subsequent experiments discussed below explore a starker contrast between maximized and minimized constraint.

2. Creative Cognition in Toy Design

Marketing professors Page Moreau and Darren Dahl continued Finke's work by examining how individuals' cognitive processes shift when confronted with constraint.¹⁶⁷ As in Finke's study, the experiment required participants to design a product, in this case a toy, by combining various basic shapes. Each participant saw a set of twenty shapes but could use only five of them. The experiment involved two forms of constraint. First, some participants were allowed to choose their parts, while others were required to accept parts that were randomly assigned. Second, some participants were permitted to use as many of the selected five parts as they wished, while others were required to use all five.

After sketching out and describing the toy design, participants answered a series of questions about the creative process. Those responses measured whether, consistent with path-of-least-resistance cognition, the participant had used a top-down process of conforming the design to a known exemplar, or had instead used a bottom-up constructive strategy. Finally, a blind panel of product design professionals judged the originality and appropriateness of each design.

Moreau and Dahl found that as the constraints increased, so did creative cognition. Participants who were randomly assigned their object parts tended to process in an exploratory, creative way, while participants who chose their own parts tended to pursue a goal-oriented approach based on prior exemplars.¹⁶⁸ The study also noted a strong creative synergy between the constraint of being assigned the object parts and the constraint of having to use all five of them. Participants who had to contend with both on average employed significantly more creative processing than others did.¹⁶⁹

As creative cognition increased, so did creative output. Deviating from the path of least resistance made the designs more original and, to Moreau's

¹⁶⁶ RONALD A. FINKE, ET AL., *supra* note 162, at 69.

¹⁶⁷ Moreau & Dahl, *supra* note 146.

¹⁶⁸ *Id.* at 17–18.

¹⁶⁹ *Id.*

and Dahl's surprise, did not reduce their appropriateness.¹⁷⁰ But deviation took a great deal of cognitive effort. "Only when participants were highly constrained did they abandon a top-down, exemplar-driven approach in exchange for more constructive, creative processes."¹⁷¹

3. Creative Cognition in Knitwear

A later study, conducted by Dahl and Anne Laure-Sellier, contextualized these findings by answering three open questions: (a) whether maintaining freedom to choose inputs but moderating the size of the input universe affects creativity; (b) how participants' self-perception of creativity under constraint compares to observers' objective ratings; and (c) whether the effect of constraint depends on participants' level of experience in the creative medium.¹⁷²

The study asked participants to knit a child's scarf. All participants had at least some knitting experience, but the ones with the highest skill level were tracked separately from the others. Unlike in previous experiments, participants maintained freedom to choose their inputs (in this case, yarn) across all experimental conditions. The researchers manipulated the constraint variable not by assigning inputs, but rather by changing the size of the input universe. One group could choose from among twice as many yarns as the other. All participants were instructed to "be creative."

Professionals involved in knitwear design judged participants' output. They ranked the scarves according to both overall creativity as well as several variables that, as in previous studies, tracked originality and appropriateness. Upon finishing the project, each participant also provided a self-assessment of the scarf's creativity.

The study found that participants' perception diverged significantly from observers'. Irrespective of experience level, knitters with more yarns perceived their creativity to be greater than did knitters with fewer yarns. Yet among the experienced knitters, those with fewer yarns earned higher creativity ratings than those with more yarns. Among inexperienced knitters, the amount of choice did not significantly affect creativity in either direction. Contrary to the participants' subjective self-assessment, constraining the universe of options left experienced creators better off and inexperienced creators no worse off.

"Choice," Dahl and Sellier concluded, "gives consumers the illusion that the extensive selection of creative inputs will make them more creative."¹⁷³

¹⁷⁰ *Id.* at 18.

¹⁷¹ *Id.* at 21.

¹⁷² Anne-Laure Sellier & Darren W. Dahl, *Focus! Creative Success is Enjoyed Through Restricted Choice*, 48 J. MARKETING RES. 996, 1001–02 (2011).

¹⁷³ *Id.* at 1004.

If that illusion holds true outside the lab, then “experienced creators would seek out the largest choice set available”—even though their creativity might suffer as a result.¹⁷⁴

4. Design Fixation

Maximizing the size of choice sets is not the only way creators may unwittingly subvert their own creativity. As engineering design scholar David Jansson and cognitive psychologist Steven Smith showed in a famous series of experiments, familiarity with an existing solution to a problem can cause difficulty conceptualizing alternatives.¹⁷⁵ The study tasked advanced engineering students with devising as many varied designs of a product as possible. For each experiment, one group was shown an exemplar of a possible design; a control group was not. Both groups ultimately generated the same number of designs. But those who were shown the exemplar showed far less variability across their range of designs, were less likely to include useful features that the exemplar lacked, and regularly copied the exemplar’s flaws. Despite the instruction to vary their designs, the students simply hewed to the model. Jansson and Smith termed this phenomenon “design fixation.”

The design fixation effect has also been discovered among experienced practitioners. When Jansson and Smith ran a similar experiment using professional engineers,¹⁷⁶ they again found that those shown a prior exemplar tended to conform to it, including its flaws. A subsequent experiment by others found that even engineering design faculty who were aware of design fixation were unconsciously affected by it in their own product designs.¹⁷⁷

These studies highlight the gravitational pull of precedent. Familiar examples, it turns out, have an exceptionally strong grip on the human mind—even for those trying to escape them. Of course, building off of prior solutions is an indispensable part of the creative process, in science and art alike. Replication of existing product features may be entirely appropriate in a given instance. But not in every instance. The difficulty posed by design fixation is that individuals may not consider potential alternatives as

¹⁷⁴ *Id.* at 1005.

¹⁷⁵ See David G. Jansson & Steven M. Smith, *Design Fixation*, 12 DESIGN STUDIES 3 (1991).

¹⁷⁶ *Id.* at 9.

¹⁷⁷ Julie Linsey, et al., *A Study of Design Fixation, Its Mitigation and Perception in Engineering Design Faculty*, 132 J. MECHANICAL DESIGN 1 (2010). For other recent studies finding fixation effects, see Vimal Viswanathan & Julie S. Linsey, *Design Fixation and Its Mitigation: A Study on the Role of Expertise*, 135 J. MECHANICAL DES. 8 (2013); Carlos Cardoso & Petra Badke-Schaub, *The Influence of Different Pictorial Representations During Idea Generation*, 45 J. CREATIVE BEHAV. 130 (2011); Evangelia G. Chrysikou & Robert W. Weisberg, *Following the Wrong Footsteps: Fixation Effects of Pictorial Examples in a Design Problem-Solving Task*, 31 J. EXPERIMENTAL PSYCH: LEARNING, MEMORY & COGNITION 1134 (2005).

thoroughly as they should. Or, to put it another way, the difficulty posed by design fixation is that it constrains creators' choices. As Finke had predicted, fidelity to prior solutions homogenizes the universe of new solutions.¹⁷⁸

There is, however, evidence suggesting that this fixation effect can be mitigated. A recent replication study using the same exemplars as Jansson and Smith found that the effect could be reduced by expressly instructing participants not to reuse particular elements.¹⁷⁹ Like the law of infringement, these instructions prohibited copying aspects of the prior solution. The participants who were given the instructions successfully designed around them, avoiding fixation on the suboptimal exemplar.¹⁸⁰

5. Fieldwork

To test whether creativity and constraint had the same relationship in the field as in the lab, organizational psychologist Brent Rosso conducted a three-month ethnographic study at a multinational corporation with significant R&D expenditures.¹⁸¹ He observed the day-to-day dynamic of product and technology development teams and completed dozens of semi-structured interviews with team members. Rosso's goal was to measure team perception of early-stage creativity under constraint. Unlike Dahl's and Sellier's lab experiment, he did not contrast self-reporting with an objective indicator of innovative output.¹⁸² Nevertheless, his ethnography provides a thick description of how creative individuals experience various constraints in the real world.

Rosso found that employee perceptions depended on the type of constraint. Employees responded far more positively to restrictions on the possible solution to a problem ("product constraints"), such as a desired R&D goal, than to restrictions on the process of reaching a solution ("process constraints"), such as time or personnel.¹⁸³ Constraining the ends, in other

¹⁷⁸ See Steven M. Smith, et al., *supra* note 139, at 845 (noting that even though "learning and benefiting from prior experience is one of the most important human adaptive traits," fixation and other "unintentional" constraints "may be especially limiting to the discovery of novel ideas").

¹⁷⁹ Chrysikou & Weisberg, *supra* note 177, at 1144. These results contradicted Jansson and Smith, who had found that instructions did little to curb the fixation effect. *Id.* (discussing Jansson & Smith, *supra* note 175). Chrysikou and Weisberg hypothesize that the difference lies in the manner in which instructions were given. While they had monitored whether individual participants had read the instructions and comprehended them fully, Jansson and Smith had given their instructions in a group setting and did not monitor individual comprehension. Chrysikou and Weisberg concluded that participants are likely to follow such "defixation" instructions so long as they comprehend them. *Id.*

¹⁸⁰ *Id.*

¹⁸¹ Rosso, *supra* note 134.

¹⁸² *Id.* at 579.

¹⁸³ *Id.* at 567–70.

words, aroused more divergent thinking than constraining the means. Where interviewees thought that constraint helped their creative process, they spoke of being stimulated to try something new, describing the limitation as a provocation to move past the status quo.¹⁸⁴ Where they thought that it hurt, they spoke of being confined to the status quo.¹⁸⁵

Significantly, one of the constraints at issue was patent exclusivity, which Rosso classified as a product constraint.¹⁸⁶ In Rosso's interviews, the R&D teams tended to treat intellectual property rules as "facts of life." Those that needed to invent around those rules considered them to be a helpful constraint for creativity. This is consistent with other ethnographic research suggesting that inventors can enjoy the invent-around process as a competitive game.¹⁸⁷

For product and process constraints alike, employee perceptions also depended on the severity of constraint. Echoing Finke's experimental results, Rosso found that perceived creativity thrived best when constraints were present but not too strong. "[B]oth an overabundance and a scarcity of constraints," Rosso concluded, "are debilitating."¹⁸⁸

Rosso also discovered that individual attitudes toward constraint play a role in the creative process. Certain groups were predisposed to leverage limitations as a motivating challenge, while other groups were predisposed to treat them as nuisances.¹⁸⁹ These findings complement others' conclusions on the contingent role that attitudinal climate plays in moderating constraint's effects. Amabile and colleagues found that time pressure enhances creativity when people feel like they are "on a mission," while it inhibits creativity when they feel like they are "on a treadmill."¹⁹⁰ Similarly, a recent multi-industry survey of 94 innovation project teams revealed that, where the team's climate supported risk-taking and exploration of unusual approaches, teams produced innovative, higher-quality products under financial resource constraints.¹⁹¹ Where the climate was less supportive, by contrast, those positive results were absent. While constraints alone did not significantly correlate with innovation, constraints combined with an environment of "psychological safety and tolerance of mistakes" did.¹⁹² This much should come as no surprise. We are,

¹⁸⁴ *Id.* at 572, 576–77.

¹⁸⁵ *Id.*

¹⁸⁶ *Id.* at 568. It is not clear whether the R&D teams were contending with product patents alone or with method patents as well.

¹⁸⁷ See Silbey, *supra* note 100, at 465. Some creators working under copyright constraints offer a decidedly more negative view. I discuss the discrepancy below in Part IV.

¹⁸⁸ Rosso, *supra* note 134, at 578.

¹⁸⁹ *Id.*

¹⁹⁰ Teresa Amabile, et al., *Creativity Under the Gun*, 80 HARV. BUS. REV. 52 (2002).

¹⁹¹ Matthias Weiss, et al., *Making Virtue of Necessity: The Role of Team Climate for Innovation in Resource-Constrained Innovation*, 28 J. PRODUCT INNOVATION MGMT. 196 (2011).

¹⁹² *Id.* at 204.

reasonably enough, more likely to harness constraints to their creative advantage when we enjoy the activity.

6. Summary

These studies tell a Goldilocks tale of creativity and constraint. There can be too much restriction, but there can also be too little, and somewhere in between is an amount that is just right. They also show that not all constraints are created equal (or are equally creative). The effect of limiting creative choice will depend on a combination of factors, including how it operates, who is being limited, who is doing the limiting, and when the limit is imposed. A proper conceptualization of constraint thus comprises not a single indivisible variable, but rather an aggregation of multiple characteristics. Those characteristics are the subject of the next Part.

IV. A MODEL OF GENERATIVE CONSTRAINT

Thus far, this Article has discussed the intuitive risks and counterintuitive rewards that constraint holds for the creative process. Copyright's incentives/access debate has done a good job recognizing the risks. Yet it has all but ignored the rewards. On the traditional account, the total amount of creativity that the copyright system generates is equal to the difference between two variables: the upstream creative output that copyright protection incentivizes minus the downstream creative output that copyright restriction suppresses. A creating around view recognizes a third variable that the traditional account overlooks: the downstream creative output that copyright restriction inspires. My analysis thus supplements the standard upstream incentives justification for copyright protection.

The size of this overlooked variable does not depend on copyright's incentive effects upstream. The system could provide few incentives upstream while still generating much creativity downstream, or vice versa. Indeed, if copyright restrictions generate more downstream creativity than they suppress, they would yield a net creativity gain even in the extreme scenario that they failed to incentivize *any* marginal creativity upstream. According to some, we're much closer to that extreme than defenders of copyright care to admit.¹⁹³ Even assuming that's true, though, copyright constraint could still be defended if it stimulates enough creativity downstream to pay for itself. If we are to take seriously copyright law's mandate "to stimulate artistic creativity for the general public good,"¹⁹⁴ we need to begin recognizing the generativity of

¹⁹³ See, e.g., Zimmerman, *supra* note 125; Julie E. Cohen, *Copyright as Property in the Post-Industrial Economy: A Research Agenda*, 2011 WIS. L. REV. 141, 143 (2011); Yochai Benkler, *Coase's Penguin, or Linux and the Nature of the Firm*, 112 YALE L.J. 369, 426–34 (2002).

¹⁹⁴ *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975)

constraint.

The constraint critique of copyright law emphasizes the importance of serendipity and unpredictability to the creative process.¹⁹⁵ Not every step of the creative process is purposive; many of its fruits are unanticipated at the outset. This is profoundly true, so far as it goes. What is false is the notion that this vital serendipity comes solely from expansive choice. Roadblocks produce their own serendipities. That is the lesson of inventing around. Roadblocks gave us technologies that no one foresaw at the start.¹⁹⁶

It is also the lesson Picasso taught when he said that constraint “obliges you to make a kind of progress that you can’t even imagine in advance.”¹⁹⁷ Restrictions can invite problem finding and problem solving we would not otherwise have thought to pursue. When members of Kanye West’s production team could not obtain a license for a music sample from the owner of the sound recording, they decided to re-record the sample themselves.¹⁹⁸ The resulting track, *All Falls Down*, was, in the team’s estimation, better off for it.¹⁹⁹ After filmmaker David Newhoff was unable to incorporate The Shirelles’ classic *Tonight’s the Night* into a film scene, he discovered a public domain song that he wished he had thought of to begin with. “Because I couldn’t have what I thought I wanted in the first place,” he reflected, “I ended up with something much better simply because I was forced to go look for it.”²⁰⁰ Without copyright’s constraints, we wouldn’t have these creations.

Create-around benefits are particularly visible in segments of the digital sampling world. Peter DiCola’s and Kembrew McLeod’s recent ethnography, though far from a pro-copyright case study, reports that many DJs find creative inspiration in transcending the limitations that copyright imposes.²⁰¹ One described various layering techniques he uses to “camouflage” unlicensed

¹⁹⁵ See, e.g., Cohen, *supra* note 2, at 1178, 1190–91; Tushnet, *supra* note 88, at 542–43.

¹⁹⁶ See *supra* notes 107 through 113 and accompanying text.

¹⁹⁷ See *supra* note 126 and accompanying text. This phenomenon prompted art critic Clement Greenberg’s observation that “the pressure of the resistance offered by the conventions of a medium of communication” can

act to guide and evoke and inspire it, it can be an enabling as well as a resistant pressure; and it guides and enables and evokes and inspires precisely by virtue of its resistance. Measure in verse and in music, patterns in ballet, ordered necessities of progression in drama, prose or verse fiction, and movies: These have empowered creation at the same time as they have constrained—and because they have constrained it.

CLEMENT GREENBERG, *HOMEMADE AESTHETICS: OBSERVATIONS ON ART AND TASTE* 48 (1999).

¹⁹⁸ DICOLA & MCLEOD, *supra* note 10, at 190. They did, however, have a license from the publisher that owned the rights to the composition.

¹⁹⁹ *Id.*

²⁰⁰ See Newhoff, *supra* note 10.

²⁰¹ DICOLA & MCLEOD, *supra* note 10.

samples, which, in his words, “put[s] some creativity into it as opposed to just straight thievery.”²⁰² Another praised the technique of a fellow sampler who, in an effort to avoid licensing, knew how to “take a sound, and turn it sideways and press it down and stretch it out and move it—to actually take that raw material and create something new.”²⁰³ Yet another explained how the challenge of circumventing sampling restrictions makes the music “more beautiful It makes you want to change that sound because if you just use it then it’s theirs and that’s stealing.”²⁰⁴

An ethnomusicological study of copyright’s effects on British sampling culture uncovered similar creative practices.²⁰⁵ Just as some producers had once found a creative muse in the technological limitations of sampling equipment, so they now find a muse in the legal limitations of copyright licensing. One producer explained the exploratory process that copyright encouraged:

In the same way as having a sample, you’re imposing those restrictions upon yourself, and quite often it’s the pushing up against those restrictions and dealing with music that is already completed and using that as the starting point for something else—it’s those restrictions which I think really test and encourage your creativity So yeah, you tend to take less obvious bits of records and obviously you hunt for more obscure records, or you chop something within an inch of its life so even you’ve forgotten what you sampled The new cautious approach in itself becomes a limitation, but not necessarily a bad one.²⁰⁶

For these creators, copyright has a stimulating effect—not necessarily the upstream version that we’re accustomed to, but the downstream version of creating around.

Obviously, imposing constraint is not a Pareto optimal fix for cultural production. Scholars like Larry Lessig, Jamie Boyle, Peter Jaszi, and Patricia Aufderheide have told powerful stories about missed opportunities inflicted by the copyright system. No one can reasonably deny that copyright restrictions prevent some creators from producing valuable work. But there would be other missed opportunities if all copyright restrictions were eliminated. Removing constraint, just like adding constraint, means that some creations will never be made. If serendipity is our lodestar for creativity policy, limitlessness has no pride of place over limitedness.

The problem with idealizing free culture or open innovation is not that freedom and openness always hurt creativity. To a degree, they help. The

²⁰² *Id.* at 195.

²⁰³ *Id.* at 196.

²⁰⁴ KEMBREW MCLEOD, *OWNING CULTURE: AUTHORSHIP, OWNERSHIP, AND INTELLECTUAL PROPERTY LAW* 95 (2001).

²⁰⁵ Morey, *supra* note 10, at 59.

²⁰⁶ *Id.* (alterations, other than the first, in original).

problem, rather, is that this idealization tells only half the story behind the creative process. Not every constraint is necessarily productive, and we are right to question whether particular ones help or hurt (a task that I take up below). But not every freedom is necessarily productive, either. Scholars have rightly spent much time tearing down the romantic narrative of the sole creator, only to replace it with an equally romantic narrative about creative freedom. That freedom is in some sense an oxymoron. Creators are always under some constraint, whether consciously or not.²⁰⁷ As the design fixation studies demonstrate, familiarity confers its own powerful but often hidden constriction.²⁰⁸ Solving an ill-structured problem one way can inhibit recognition of other solutions and ways to define the problem. In effect, one “becomes a prisoner of one’s own expertise.”²⁰⁹ An individual can be constrained by prior solutions, or by express limits that make reliance on prior solutions less likely. Both limit creative choice, but at least the latter one promotes originality.

This is the underappreciated dynamism of constraint on expression. However open our copyright system becomes, creators will always be constrained. The question is by what: a constraint that promotes creativity, or a constraint that does not? Copyright law will better fulfill its purpose if those crafting it and critiquing it come to recognize that optimizing constraint doesn’t always mean minimizing it.

Still—and here’s the rub—optimizing doesn’t mean maximizing, either. That makes implementing these insights at the policy level extraordinarily difficult. Even if the ideal amount of constraint is larger than zero, the exact number remains unknown. That uncertainty quickly evokes visions of a Laffer Curve.²¹⁰ An increase in constraint yields an increase in

²⁰⁷ See Robert J. Sternberg & James C. Kaufman, *Constraints on Creativity: Obvious and Not So Obvious*, in *THE CAMBRIDGE HANDBOOK OF CREATIVITY* 467, 479 (James C. Kaufman & Robert J. Sternberg eds., 2010) (describing “internal constraints” that impede creativity precisely because “the individual is usually not even aware that they exist”); Patricia D. Stokes, *Creativity from Constraints: What Can We Learn from Motherwell? From Modrian? From Klee?*, 42 *J. CREATIVE BEHAVIOR* 223, 234 (2008) (arguing that because stylistic conventions constrain any artistic domain, true artistic freedom is left to those experts who “self-impose constraints on their currently successful solutions”); David Daley, *David Byrne: “Do You Really Think People Are Going to Keep Putting Time and Effort Into This, If No One is Making Any Money?”*, *SALON*, Dec. 21, 2013 (quoting musician David Byrne’s perspective that because art is inherently constrained by its environment, “a lot of creative decisions are kind of made for us, and the trick is then working creatively within those constraints.”)

²⁰⁸ See *supra* notes 175 to 178 and accompanying text; see also Sternberg & Kaufman, *supra* note 207, at 480.

²⁰⁹ Sternberg & Kaufman, *supra* note 207, at 480.

²¹⁰ The Laffer Curve posits that there exists an optimal tax rate somewhere between 0% and 100%. At either extreme, the government will collect no revenue. The devil is in the details of identifying where between 0% and 100% that optimal point lies. For an analogy between the Laffer Curve and copyright policy framed in terms of incentives rather than constraint, see Lior Jacob Strahilevitz, *Wealth Without Markets*, 116 *YALE L.J.* 1472, 1481 (2007)

creativity—up until a point. Past that point, however, increasing constraint only reduces creativity. Without knowing where the creativity-maximization point lies, we cannot determine whether the existing level of copyright constraint falls on the left or the right of the curve’s crest. If the latter, then even accepting the proposition that some positive amount of constraint is a good thing, there is still some teeth to the charge that copyright harms downstream creativity. Indeed, after accounting for all the other constraints in life that creators must face, perhaps creators are already at or past the ideal point even before copyright enters the picture. That would mean that *any* amount of copyright restriction is too much—leading full circle back to the claim that I questioned at the outset of this Article: restricting downstream creators through copyright is at best a necessary evil.

Assessing whether our current copyright restrictions can serve a generative function downstream requires a finely grained understanding of constraint’s various moving parts. The first step is a more thorough taxonomy of those parts. Conceptualizing constraint as a function of multiple qualitative variables, rather than the single variable plotted on a Laffer Curve, permits a more nuanced analysis of how copyright law affects creativity on the ground. On this theory, one cannot speak of an optimal quantity of constraint without first identifying what kind of constraint is at issue. Yet the creativity literature has not yet provided such a taxonomy. I address that gap here by introducing a model of constraint’s various elements and their application to creative expression. Drawing from and synthesizing the work discussed in the previous Part, I unbundle constraint into seven different characteristics: source, target, scope, clarity, timing, severity, and polarity. This model provides the conceptual scaffolding for the discussion of particular copyright doctrines in Part V, as well as for future empirical investigation.

The constraints that are best structured to generate creativity within a given population will be those whose characteristics collectively satisfy two criteria. First, they should promote variability, that is, differentiation from an existing corpus of exemplars.²¹¹ A constraint that encouraged replication of the status quo would fail this test, while a constraint that encouraged diversification would pass it.²¹² Second, because intrinsic motivation matters,

(book review) and Salil K. Mehra, *Copyright, Control, and Comics: Japanese Battles Over Downstream Limits on Content*, 56 RUTGERS. L. REV. 181, 185–86 (2003); see also Matt Schruers, *Copyright’s Laffer Curve, or, Why the Republican Study Committee Was Right*, PROJECT DISCO (Nov. 19, 2012) <http://www.project-disco.org/intellectual-property/111912-copyrights-laffer-curve-or-why-the-republican-study-committee-was-right/>.

²¹¹ See STOKES, *supra* note 39, at 7–8.

²¹² See *id.* (discussing constraints that turn ill-structured problems into well-structured ones); FINKE, ET AL., *supra* note 139, at 32 (distinguishing between “restrictions that encourage new explorations and considerations, and those that tie one to conventional approaches”). There may be such a thing as excessive variability. Most people appreciate artistic novelty only up until a point, but no further. Aesthetic development is thus incremental rather than

constraints should also promote engagement. Creators tend to find more inspiration from rules if they derive satisfaction from following them.²¹³ Each of constraint's characteristics will be at its generative best when pushing toward variable products and engaged processes. My theory is that copyright's basic excludability mechanism promotes variability, pushing creators closer to the creativity-maximization point rather than away from it. At the same time, the mechanism's late-stage enforcement and ambiguous scope impedes that variability, and may sow disengagement as well.

A. Source

It is reasonable to expect that a constraint's impact would depend on where the constraint comes from. Perhaps Schoenberg's productivity under the strictures of his twelve-tone musical scale would have played out differently had they been foisted on him rather than voluntarily adopted. And perhaps Shakespeare's success with the sonnet form would have been different if the form had been dictated by government fiat rather than by the stylistic conventions of the domain in which he worked. The first step in analyzing a constraint should be to identify its source.

A useful analytic tool is political theorist Jon Elster's division of artistic constraints into three categories: invented, chosen, and imposed.²¹⁴ An invented constraint is one that the creator elects as a strictly voluntary pre-commitment. Think of Schoenberg's dodecaphony, Man Ray's rayographs, or Francis Bacon's thrown paint. These are restrictions that, the creator predicts, will have some positive effect on the expression he produces. A chosen constraint is generated by the genre's stylistic conventions. Shakespeare did not invent the sonnet form, nor did Mozart invent the sonata form. Each of them, however, adopted the form's constraints. Of course, some creators may not experience adherence to particular conventions as much of a choice. But much of the time, compliance is a voluntary act.

Imposed constraints emanate neither from the creator nor from the expressive domain in which she works. Instead, they are mandated by outside forces incidental to the genre.²¹⁵ If a composer wants to write a flute concerto, he is stuck with the physical range of the flute. If a director has a strict budget, she cannot overspend. If a commissioned artist is given marching orders by a client, he must follow them, at least on pain of losing the commission.

punctuated. See Fromer, *supra* note 25, at 1479–1482. At the same time, it would be foolish to inhibit individuals with innately high variability. Over time, many have come to enjoy Van Gogh's art, Stravinsky's music, and Keats's writing, even if their contemporaries didn't.

²¹³ See *supra* notes 189 to 192 and accompanying text.

²¹⁴ ELSTER, *supra* note 13, at 175–76.

²¹⁵ As Elster notes, there is often a relationship between chosen and imposed constraints, as technical limitations spill over into stylistic ones. See *id.* at 176 (discussing early records whose small physical capacity affected conventions surrounding jazz solos in the prewar era).

Copyright's prohibition on reusing protected material is an imposed constraint. For this reason, analogies to chosen constraints like sonnets and sonatas might seem dubious. Invented and chosen constraints should have an easier time securing creators' buy-in than imposed ones, which bear less expressive significance to those constrained by them. All other things being equal, we should expect an imposed constraint to provoke less engagement. Moreover, even within the universe of imposed constraints, people might distinguish between physical incapacity and human agents' directives. Necessity may be the mother of invention, but maybe not where the necessity extends no farther than another's say-so.

Still, even if this is a distinction with a difference, it is not a dispositive one. The successful experiments discussed in Part III.B involved imposed constraints. There are also historical examples of creators finding inspiration in working around restrictions that were entirely of others' making. Hays Code-era filmmakers and Victorian novelists innovated new ways to convey meaning not in spite of, but because of, imposed constraints on content.²¹⁶ James Joyce responded to censorship with the cryptic yet profoundly influential prose of *Finnegan's Wake*.²¹⁷ Even the most repressive regimes elicit creative responses.²¹⁸ One does not need to endorse repression as cultural policy to appreciate that the constraints we impose on each other can generate unanticipated and valuable forms of creativity.

Generative yet imposed constraints need not be so dramatic. Artists in creative fields with robust anti-copying norms have thrived in producing new material that adheres to those norms. In stand-up comedy, for instance, the reputational cost of appropriating others' jokes stimulates continued innovation in developing new ones.²¹⁹ Such norms are unlikely to propagate in

²¹⁶ See NORA GILBERT, *BETTER LEFT UNSAID: VICTORIAN NOVELS, HAYS CODE FILMS, AND THE BENEFITS OF CENSORSHIP 2* (2013) ("Rather than being ruined by censorship, the novels written in nineteenth-century England and the films produced under the Production Code were stirred and stimulated by the very forces meant to restrain them."); ELSTER, *supra* note 13, at 227–33 (exploring how the Hays Code enabled directors to develop new forms of double-entendre, innuendo, and layered meaning).

²¹⁷ PAUL VANDERHAM, *JAMES JOYCE AND CENSORSHIP: THE TRIALS OF ULYSSES* 59 (1998).

²¹⁸ See, e.g., Yu Hua, *The Spirit of May 35th*, INT'L HERALD TRIB., June 23, 2011 (offering a Chinese novelist's account of how evading state censorship has "give[n] full rein to the rhetorical functions of language, elevating to a sublime level both innuendo and metaphor, parody and hyperbole, conveying sarcasm and scorn through veiled gibes and wily indirection. Surely our language has never been as rich and vital as it is today."); Philippe D. Radley, *Censorship as a Creative Stimulus: The Russian Experience*, 53 WORLD LIT. TODAY 201, 202 (1979) (arguing that, paradoxically, Russia's censorship policies are responsible for its prominent literary culture).

²¹⁹ See Dotan Oliar & Christopher Sprigman, *There's No Free Laugh (Anymore): The Emergence of Intellectual Property Norms and the Transformation of Stand-Up Comedy*, 94 VA. L. REV. 1787, 1853–54, 1857 (2008).

most large-scale creative industries.²²⁰ But law can perform the same function. Innovators can find engagement in inventing around patents, notwithstanding patent law's status as an imposed constraint.²²¹ Some artists already describe similar engagement in creating around copyright law.²²²

The actual magnitude of the creating around phenomenon deserves empirical investigation. At the very least, it is apparent that many artists doubt that copyright law has much to offer the creative process,²²³ suggesting significant room for improvement. Even where engagement is low, however, copyright constraint's source is probably not the primary culprit.

B. Target

The constraint's target is the locus of activity or resources that is constrained. Rosso's process/product dichotomy²²⁴ speaks to this particular element. A constraint on process limits how a given task may be completed. It could involve money, time, resources, or methodology. Imagine a poet participating in a contest whose rules provide a tight deadline, prohibit consultation with peers, and require handwritten submissions. The finished poem might be in free verse and on any subject imaginable, but the poet is nevertheless under several process constraints. A constraint on product, by contrast, limits the range of permissible solutions, irrespective of the process of getting there. Think here of a second poet constricted by the metrical demands of the chosen genre.

Broadly speaking, all constraints target at least one of these two categories. But the boundaries between them are porous. What limits process often limits product, and vice versa. Matisse's cutouts relied on the process

²²⁰ See ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES 167 (1991) (arguing that social norms are most effective among those with strong social bonds); Jonathan M. Barnett, *The Illusion of the Commons*, 25 BERK. TECH. L.J. 1751, 1754–55 (2010) (observing that “[r]eputation-driven norms exert no force against one-shot or other participants that have no rational interest in accumulating reputational capital and . . . can be expected to exhibit declining force in general as any market exhibits increased group size, economic values, capital-intensity requirements and variation in innovative capacity.”) Case studies of anti-copying norms within creative communities have thus tended to focus on close-knit groups. E.g., Aaron Perzanowski, *Tattoos & IP Norms*, MINN. L. REV. 511, 578 (2013); David Fagundes, *Talk Derby to Me: Intellectual Property Norms Governing Roller Derby Pseudonyms*, 90 TEX. L. REV. 1093, 1133 (2012).

²²¹ See Silbey, *supra* note 106, at 464–65 & n.58.

²²² See *supra* notes 10–12 and 198–206 and accompanying text.

²²³ See, e.g., PATRICIA AUFDERHEIDE ET AL., COPYRIGHT, PERMISSIONS, AND FAIR USE AMONG VISUAL ARTISTS AND THE ACADEMIC AND MUSEUM VISUAL ARTS COMMUNITIES: AN ISSUES REPORT 25 (2014), <http://www.collegeart.org/pdf/FairUseIssuesReport.pdf> (reporting that interviewed artists “typically did not want to think about copyright as they made their work for fear of it interfering with their creativity”); Jane C. Ginsburg, *How Copyright Law Got a Bad Name for Itself*, 26 COLUM. J.L. & ARTS 61 (2002).

²²⁴ See *supra* note 183 and accompanying text.

constraint of eschewing the traditional paintbrush and canvas in favor colored paper shapes.²²⁵ His product was inextricably bound up with that process. The same will not be true of the poet participating in the contest. His time pressures do not necessarily alter the solution he is pursuing. Thus, there is sometimes, but not always, a feedback loop between product and process constraints.

For expressive works, the category of product constraint may be subdivided further into goal and element.²²⁶ A goal constraint is the most foundational criterion for determining what is or isn't appropriate.²²⁷ When a goal constraint is widely recognized, it takes the form of a genre. Thus, a composer may be limited to a Baroque-style concerto, a screenwriter to a romantic comedy, a choreographer to a pas de deux, or a painter to surrealism. An original goal constraint represents a radical break with existing convention, and, if it ends up being widely adopted, may give rise to a new convention. Element constraints limit the thematic material within the domain that is available for recasting and recombination. These are the bits and pieces of culture that creators have at their disposal, what Paul Klee figuratively called the "contents of the paint box."²²⁸

A goal constraint ultimately dictates whether other constraints are compatible with the project.²²⁹ Where a goal constraint conflicts with element or process constraints, something has to give. One must either find a different problem to solve, or, if feasible, relax the other constraints. This phenomenon explains the result of Finke's second creative invention experiment. When participants struggled to create an appropriate chair, it was because the goal constraint (a chair) conflicted with an element constraint (the basic object parts available to them).²³⁰ When that goal constraint was broadened to furniture more generally, the conflict dissipated.

Copyright law straddles the border between product and process constraint. At the product level, copyright restricts both goal and element. If my goal is to make the next *Rocky* film, copyright law tells me in fairly simple

²²⁵ Patricia D. Stokes, *Crossing Disciplines: A Constraint-Based Model of the Creative/Innovative Process*, 31 J. PRODUCT INNOVATION MGMT. 247, 251 (2014).

²²⁶ Here I am modifying Stokes' typology somewhat. She adds another category, subject constraints, which regulate "content and motifs." Stokes, *supra* note 23, at 109. Because I do not see a material difference between a work's content and its stylistic elements, I conflate the two categories. Stokes also uses a fourth category, task constraint, which is analogous to process constraint as I use it here. Finally, what I call an element constraint Stokes calls a "source constraint." I avoid that term because of its overlap with source in the sense that I use it here, to refer to the entity doing the constraining.

²²⁷ Stokes has elsewhere referred to goal constraints as criterion constraints. Stokes, *supra* note 225, at 249.

²²⁸ Stokes, *supra* note 23, at 109.

²²⁹ *Id.*

²³⁰ See *supra* note 155–57 and accompanying text.

terms that I had best get a license.²³¹ If I merely wish to use protected material from *Rocky* as an element of some other follow-on project, copyright limits the circumstances under which I may do so. Fair use doctrine grants me the privilege to use copyrighted material under particular circumstances,²³² while under other circumstances I am again limited to what the copyright owner will allow. Product constraint is copyright's most easily recognizable restriction on creative choice.

The constraint at the process level is subtler. While processes can be patented, they cannot be copyrighted.²³³ Copyright law will scrutinize what downstream creators make rather than how they make it. That means no upstream creator has an exclusive right over method. Nevertheless, because of the product/process feedback loop, copyright law can still place significant constraints on process. Homage and pastiche are not product goals in themselves; they are paths to get there. How much of those paths are available depends on how much copyright law permits. A maximalist copyright law shorn of the fair use defense, the *scènes à faire* doctrine,²³⁴ and other safeguards for borrowing and quotation would cast a long shadow not just over what society creates but also how society creates. Even a minimalist copyright law that regulated only verbatim reproduction would still restrict processes at the margin. For some, verbatim reproduction is itself an expressive process. Take Mike Bidlo, whose professed goal is to undermine traditional myths of romantic genius and originality—and whose process for reaching that goal is to construct exact duplications of canonical twentieth-century works.²³⁵ A minimalist copyright law, let alone existing copyright law, would require him to obtain a license from the original owners.²³⁶ The unavoidable effect of any copyright system, maximized or minimized, is to constrain some range of processes. The question is which.

²³¹ See *Anderson v. Stallone*, 11 U.S.P.Q.2d (BNA) 1161 (C.D. Cal. 1989).

²³² 17 U.S.C. § 107. For a comprehensive discussion of these circumstances, see Pamela Samuelson, *Unbundling Fair Uses*, 77 *FORDHAM L. REV.* 2537 (2009).

²³³ See 17 U.S.C. § 102(b) (withholding copyright subject matter over, among other things, any “procedure, process, system, [or] method of operation”).

²³⁴ The doctrine deems a genre's stock elements to be unprotectable ideas. It provides that “a copyright owner can't prove infringement by pointing to features of his work that are found in the defendant's work as well but that are so rudimentary, commonplace, standard, or unavoidable that they do not serve to distinguish one work within a class of works from another.” *Gaiman v. McFarlane*, 360 F.3d. 644, 660 (7th Cir. 2003).

²³⁵ See *Mike Bidlo*, in 1 *THE GROVE ENCYCLOPEDIA OF AMERICAN ART* 266 (Joan M. Marter ed., 2011); Nadine Rubin Nathan, *Asked and Answered: Mike Bidlo*, *T MAGAZINE* (Jul. 2, 2010, 12:43 PM), <http://tmagazine.blogs.nytimes.com/2010/07/02/asked-answered-mike-bidlo/> (discussing Bidlo's “dead ringers” for Warhol's famous Brillo boxes and other “exact replicas”).

²³⁶ And obtain a license he does. See Laura Gilbert, *No Longer Appropriate?*, *THE ART NEWSPAPER*, May 2012, <http://www.theartnewspaper.com/articles/No-longer-appropriate/26378>.

Other than Rosso's recent work, there has not been empirical exploration of whether product and process constraints affect creativity differently. But, as between the two, there is good reason to expect that product constraints have less downside. To begin with, even if product constraints stimulate explorations beyond the path of least resistance, Rosso's research suggests that creators tend to remain better engaged when they feel autonomy over how that exploration may be conducted.²³⁷ On top of this, processes are more generative. One can use the same process to create an endless number of different products. Society reaps the benefit of that diversified output. If a particular product is restricted, creators can generate others. But when process is restricted, so is the entire universe of products that rely on that process. A constraint on process limits far more than a constraint on product.

At the product level, copyright targets creations that repeat familiar expression. That target provides a more direct way of achieving the variability ends for which creativity scholars value arbitrary constraints. Path of least resistance theory praises constraint because and to the extent that it keeps creators away from the tried and true. One could achieve that objective obliquely, as experimental researchers have done, by layering constraint targets until the tried and true loses viability. Or one could achieve it simply by defining the tried and true as the constraint's target. This direct route is more tailored to the creative function of constraint and less likely to be over-inclusive. Through its product constraint, copyright law tries to lessen the homogenization of creative expression.²³⁸

Copyright's process constraint is more troubling. Still, some amount of it is inevitable. Just how much is a function of the next component: scope.

C. Scope

Constraint scope measures how many choices within a domain a given constraint precludes. It is likely the most difficult element of constraint to optimize for creativity, not to mention a source of voluminous debate for copyright scholars focused on upstream incentives and downstream access.²³⁹ Beyond the "tight, but not too tight" conclusion, creativity scholars have not made much headway in specifying ideal constraint scope.

Nevertheless, one fundamental guideline does emerge. Constraint

²³⁷ See *supra* notes 189 to 192 and accompanying text.

²³⁸ This is consistent with Abramowicz's microeconomic theory of the derivative work right. Abramowicz, *supra* note 70. See also Marvin B. Lieberman & Shigeru Asaba, *Why Do Firms Imitate Each Other?*, 31 ACADEMY MGMT. REV. 366, 372–73 (2006); ODED SHENKAR, COPYCATS: HOW SMART COMPANIES USE IMITATION TO GAIN A STRATEGIC EDGE (2010); Eric Bonabeau, *The Perils of the Imitation Age*, HARV. BUS. REV., Jun. 2004, at 1.

²³⁹ See, e.g., Matthew J. Sag, *Beyond Abstraction: The Law and Economics of Copyright Scope and Doctrinal Efficiency*, 81 TUL. L. REV. 187 (2006).

must not be so broad as to turn an ill-structured problem into a well-structured one or, worse, a problem whose solution set is null. As Elster notes, “[c]onstraints must leave room for choice.”²⁴⁰ Because variability within constraint is a necessary condition for the cultivation of originality, architects of constraint must pay close attention to the number of choices being restricted and the number that remain in the pool.²⁴¹ The idea is analogous to the proposal of Rochelle Dreyfuss and James Evans to limit patentable subject matter to claims that can be invented around.²⁴² Expressive problem spaces, like technological ones, should be constrained no more than would permit a diversity of solutions.

In the case of literary expression, whose pool is vast, there is often some leeway. The cost of locking up certain choices is, as Judge Boudin wrote in *Lotus Development Corp. v. Borland International, Inc.*, that “subsequent authors treating the same themes must take a few more steps away from the original expression.”²⁴³ Within many expressive problem spaces, there is room to take those exploratory steps.²⁴⁴ These spaces boast a Chomskyan “discrete infinity”—the ability to combine and permute discrete units into an endless array of meanings.²⁴⁵ So long as ideas are not copyrightable and the public domain remains rich,²⁴⁶ the discrete units that are restricted remain a small fraction of the cultural universe. If the path of least resistance is blocked, there remain other paths to try, other opportunities for serendipitous encounters to occur.

The usual rejoinder here is that language matters. “Synonymy is suspect,” Leslie Kurtz reminds us, “and no two terms are likely to have exactly

²⁴⁰ ELSTER, *supra* note 13, at 176.

²⁴¹ See *id.*; Johnson-Laird, *supra* note 15, at 218 (defining creativity as involving “freedom of choice” that is “made from among options that are specified by criteria”).

²⁴² Rochelle C. Dreyfuss & James P. Evans, *From Bilski Back to Benson: Preemption, Inventing Around, and the Case of Genetic Diagnostics*, 63 STAN. L. REV. 1349, 1371 (2011) (arguing that the feasibility of inventing around should be a criterion for patentable subject matter, which would “require both a grasp of the field and an understanding of the patented invention’s epistemic significance within it”).

²⁴³ 49 F.3d 807, 819 (Boudin, J., concurring), *aff’d*, 516 U.S. 233 (1996). This stands in contrast to “functional” expression like software code, which tends to have less space for creating around. *Id.* See also Jonathan Masur & David Fagundes, *Costly Intellectual Property*, 65 VAND. L. REV. 677, 713 (2012) (noting that because of the idea/expression dichotomy, “copyrights are much easier to engineer around than patents.”).

²⁴⁴ See Hughes, *supra* note 120, at 981.

²⁴⁵ See NOAM CHOMSKY, *NEW HORIZONS IN THE STUDY OF LANGUAGE AND MIND* 3 (2000).

²⁴⁶ These are not foregone conclusions, however. See *Golan v. Holder*, 132 S. Ct. 873, 906 (2012) (Breyer, J., dissenting) (attacking majority’s holding that Congress may restore copyright protection to public domain works because shrinking the public domain “restricts, and thereby diminishes, Americans’ preexisting freedom to use formerly public domain material in their expressive activities.”)

the same meaning.”²⁴⁷ True enough. But that alone is not a reason to privilege the meaning that one defaults to in the first instance over the meaning that one makes in order to satisfy a constraint. Indeed, Kurtz’s analysis shows how constraint can sharpen meaning rather than dull it. She points to Keats’s *Ode to a Nightingale*, reflecting on how trite the ideas could be if conveyed through different language.²⁴⁸ It is not coincidence that the elevated expression she praises was restricted by iambic pentameter and an ABAB rhyme scheme.

The fair use doctrine that has developed over the past two decades has carved out space for downstream creators who develop transformative adaptations of prior expression.²⁴⁹ In doing so, it sets up a regime of selective excludability. Reusing protected expression is neither categorically restricted nor categorically permitted. Under that regime, at least as it is usually applied, downstream creators may use whatever process they wish so long as the product is transformative. This constraint, like the derivative work exclusivity that operates in the background, promotes variability. Courts have sometimes strayed from this approach, however, and used language suggesting that a process is per se infringing.²⁵⁰ Most notoriously, the court in *Bridgeport Music, Inc. v. Dimension Films* declared, “Get a license or do not sample.”²⁵¹ Process constraints like this are far broader in scope, and thus far more problematic, than product constraints. Copyright’s restrictions will remain most generative if courts focus on the accused work rather than on the artistic practices behind it. The *Bridgeport* court acted in the name of doctrinal clarity, an eminently laudable goal in this model, but that clarity could be achieved more generatively through product constraint. Admittedly, as I acknowledged in the previous Section, some processes are inevitably intertwined with the fruit that they bear. But that is not reason for courts to constrain processes unnecessarily.

²⁴⁷ Leslie A. Kurtz, *Speaking to the Ghost: Idea and Expression in Copyright*, 47 U. MIAMI L. REV. 1221, 1228–29 (1993). For similar arguments, see Mark Bartholomew & John Tehranian, *An Intersystemic View of Intellectual Property and Free Speech*, 81 GEO. WASH. L. REV. 1, 70 (2013); Cohen, *supra* note 2, at 1176.

²⁴⁸ Kurtz, *supra* note 247, at 1229.

²⁴⁹ See, e.g., *Seltzer v. Green Day, Inc.*, 725 F.3d 1170 (9th Cir. 2013); *Cariou v. Prince*, 714 F.3d 694 (2d Cir. 2013); *Blanch v. Koons*, 467 F.3d 244 (2d Cir. 2006); *Suntrust Bank v. Houghton Mifflin Co.*, 268 F.3d 1257 (11 Cir. 2001). Because fair use does much more than promote creativity, it also protects a number of socially desirable but non-transformative uses, ranging from scholarship to news reporting to web indexing. See Samuelson, *supra* note 232, at 2555–2615.

²⁵⁰ See, e.g., *Rogers v. Koons*, 960 F.2d 301, 303 (2d Cir. 1992) (beginning the opinion by noting that the “key to this copyright infringement suit” was “defendants’ borrowing of plaintiff’s expression”).

²⁵¹ 410 F.3d 792, 801 (6th Cir. 2005). While *Bridgeport*’s holding dealt only with substantial similarity, this language has affected perceptions of fair use. See David Fagundes, *Crystals in the Public Domain*, 50 B.C. L. REV. 139, 154 (2009).

Precisely how broad or narrow constraint scope should be to maximize creativity is ultimately an empirical question that psychologists have yet to resolve. The answer ought to color what kinds of adaptations the fair use doctrine should permit. Till then, it is at least clear that embracing constraint as a source of generativity is fully consistent with fair use's basic architecture, along with the idea/expression dichotomy and a capacious public domain.

D. Clarity

Some constraints are clearer than others. The haiku and the sonnet employ unambiguous rules of meter, stress, and structure. One can readily discern whether one has complied with those rules. By contrast, many stylistic conventions employ messier standards. Comedy is expected to have a certain narrative arc, but *ex ante* it's difficult to quantify precisely when that expectation has been met.²⁵² Classical style requires a sonata's development section to elaborate on the motives and themes introduced in the exposition section, yet it gives little guidance about what constitutes appropriate elaboration.²⁵³ Obscenity occurs whenever Justice Stewart sees it.²⁵⁴ In this second group of constraints, the corpus generates the criteria, rather than the other way around.

Creativity researchers who laud the beneficial role of constraints tend to focus on clear rules. I am not aware of any empirical work that assesses clarity's significance in the relationship between constraint and creativity. But all else being equal, unclear prohibitions are likely worse than clear ones. An ambiguous constraint's scope might extend indefinitely, and guessing wrong is often costly. Elster observes that in former Communist countries, dissident authors sought clear boundaries from censors because it would enable "writing around" them; censors refused for precisely the same reason.²⁵⁵ While there may be some speakers willing to engage in expression no matter the costs, they would presumably be just as willing if the constraints were clear.²⁵⁶ Consistent with this hypothesis, Rosso's fieldwork found that R&D employees appreciated precisely drawn constraints.²⁵⁷ If this theory is correct, then

²⁵² See, e.g., ANDREW STOTT, COMEDY 1–3 (2004) (describing slipperiness of criteria for evaluating comedy).

²⁵³ THOMAS SCHMIDT-BESTE, THE SONATA 77 (2011).

²⁵⁴ See *Jacobellis v. Ohio*, 378 U.S. 184, 197 (1964) (Stewart, J., concurring).

²⁵⁵ ELSTER, *supra* note 13, at 233; JON ELSTER, POLITICAL PSYCHOLOGY 90 (1993).

²⁵⁶ It is true that ambiguity might mitigate the costs of suboptimal constraint scope. If a constraint were drawn clearly but too narrowly, ambiguity could helpfully broaden it. But what's doing the useful work in that scenario is the constraint's scope, not its ambiguity; the creator would be better off with a broad and certain rule, rather than a zone of ambiguity surrounding an otherwise narrow one.

²⁵⁷ Rosso, *supra* note 134, at 564 (discussing how "respondents found the definition and clarity resulting from product requirements constraints to be quite helpful," even though such

unclear prohibitions are more suppressive downside than generative upside.

Unsurprisingly, the need for brightly drawn boundaries animates the jurisprudence and commentary on inventing around a patent. The Supreme Court has recognized that a “zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims would discourage invention only a little less than unequivocal foreclosure of the field.”²⁵⁸ It’s tough to think outside the box if you don’t know where the box ends.

The same principle should apply to creating around a copyright. The difficulty is that copyrights, unlike patents, have no delineated claims defining their periphery. Because infringement doctrines like substantial similarity, the idea/expression dichotomy, and fair use leave room for debate about which aspects of a copyrighted work are protected and which are not, creating around can be an uncertain business.²⁵⁹ Lessig states that fair use is no more than “the right to hire a lawyer.”²⁶⁰ Other scholars have noted the “false positives” problem that these uncertain boundaries produce.²⁶¹ Typically, this issue is framed in terms of mitigating downstream harm: claiming exclusive rights in any more than is necessary only exacerbates society’s existing loss from the incentives/access tradeoff. But from a creating around perspective, uncertain copyright scope has an added layer of perniciousness. Even if a copyright owner overclaims his actual property right, downstream creators could create around it if the wrongly extended boundaries are clear. That’s not optimal, to be sure, but at least there is some generative payoff. If the boundaries are fuzzy, however, the chill on create-around efforts compounds the overclaiming problem. Not only does the upstream creator receive a windfall, but the downstream constraints become less productive, too.

specificity “might be expected to be perceived as inhibiting creative possibilities”).

²⁵⁸ *United Carbon Co. v. Binney & Smith Co.*, 317 U.S. 228, 236, (1942). *See also* *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2130 (2014) (explaining that imprecise patent claims “foster the innovation-discouraging zone of uncertainty against which this Court has warned” (internal citations and quotation marks omitted)); *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 732 (2002) (“If competitors cannot be certain about a patent’s extent, they may be deterred from engaging in legitimate manufactures outside its limits.”); *General Elec. Co. v. Wabash Appliance Corp.*, 304 U.S. 364, 369 (1938) (“The limits of a patent must be known for . . . the encouragement of the inventive genius of others.”); *In re Bilski*, 545 F.3d 943, 977 (Fed. Cir. 2008) (Newman, J., dissenting) (“Uncertainty is the enemy of innovation.”); Craig Allen Nard, *Certainty, Fence Building, and the Useful Arts*, 74 *IND. L.J.* 759, 791–95 (1999) (discussing virtues of certainty for invent-around activity).

²⁵⁹ *Nash v. CBS, Inc.*, 899 F.2d 1537, 1540 (7th Cir. 1990) (recognizing confusion over the proper level of generality for analyzing wrongful copying and acknowledging that “[a]fter 200 years of wrestling with copyright questions, it is unlikely that courts will come up with the answer any time soon, if indeed there is ‘an’ answer, which we doubt.”)

²⁶⁰ LESSIG, *supra* note 5, at 187.

²⁶¹ *See* Ben Depoorter & Robert Kirk Walker, *Copyright False Positives*, 89 *NOTRE DAME L. REV.* 319, 329–31 (2013).

There is some support for this approach in the Supreme Court's decision in *Fogerty v. Fantasy, Inc.*²⁶² That case involved a musical composition deemed not substantially similar to the protected work and therefore not infringing. In addressing the question of whether a successful defendant could recover attorney's fees under the Copyright Act, the Court explained that "it is peculiarly important that the boundaries of copyright law be demarcated as clearly as possible" in order to "enrich[] the general public through access to creative works."²⁶³ The defendant had achieved that objective by "increas[ing] public exposure to a musical work that could, as a result, lead to further creative pieces."²⁶⁴ Lower courts have understood this language to refer to expansion of the public domain.²⁶⁵ Yet a successful defense could conceivably do no more than slice the pie differently between plaintiff and defendant, who (unless found to be infringing) holds a copyright on the accused work. Dismissal of the claim would have distributional consequences as between the litigants, but the size of the public domain remains constant. An alternative reading is that clear boundaries "lead to further creative pieces" by enabling create-around efforts. Knowing where the copyright owner's entitlement ends allows downstream creators to circumvent it.

In sum, the underappreciated benefit of creating around places a theoretical premium on predictability, something that copyright law has historically struggled to provide. If that theory turns out to be true, it complicates the law's ability to generate creativity downstream. Nevertheless, as I discuss below in Part V, there is cause for optimism over recent scholarly work revealing the fair use doctrine to be more predictable than has long been assumed.

E. Timing

Acting in concert with clarity, timing refers to the stage at which the creator learns if she has successfully satisfied the constraint. Like several other components explored here, timing has not been the subject of empirical study. Elster does, however, offer a useful theoretical framework. Constraints can be early, middle, or late.²⁶⁶ An early constraint occurs at the moment of creation,

²⁶² 510 U.S. 517 (1994).

²⁶³ *Id.* at 527.

²⁶⁴ *Id.*

²⁶⁵ See *Gonzales v. Transfer Techs., Inc.*, 301 F.3d 608, 609 (7th Cir. 2002) (Posner, J.) (summarizing *Fogerty* as having reasoned that "a successful defense enlarges the public domain, an important resource for creators of expressive works"); *Identity Arts v. Best Buy Enterp. Servs. Inc.*, No. 05-4656, 2008 WL 820674, at *3 (N.D. Cal. Mar. 26, 2008) (same).

²⁶⁶ ELSTER, *supra* note 13, at 229. Elster's nomenclature is actually the more elegant "upstream," "midstream," and "downstream." I depart from it here in order to avoid possible confusion over my own usage of those terms.

such as where an artist applies stylistic conventions in crafting his work. A middle constraint occurs after creation but prior to public distribution, such as where a gatekeeper refuses to disseminate the work unless changes are made. And a late constraint occurs after distribution has already occurred, such as where an outside regulator decides that a work should be banned.

Because early constraints afford the most opportunity for creating around, they are more generative than middle or late constraints.²⁶⁷ An artist who knows the rules of the game from the outset can tailor his work to those rules. This is why courts in patent cases emphasize the need for clarity *ex ante*.²⁶⁸ By contrast, an artist who learns those rules only after completing the work has wasted his time. True, he might be able to redo the project knowing now what he did not know then. But if he anticipates that his initial understanding could be erroneous, he may not attempt the create-around in the first place.

For some, copyright is an early constraint. This is the case for media firms. It is also true of the individual DJs who have pushed their sampling techniques in new directions in an effort to create around copyright,²⁶⁹ and, less productively, the documentary filmmakers whose “clearance culture” has meant a near total refusal to incorporate unlicensed material from copyrighted works.²⁷⁰ Yet for countless others, copyright functions as either a middle or late constraint. Many creative communities are not conscious of copyright law. They are affected by its restrictions only after the fact—when gatekeepers like publishers, distributors, and insurers intervene.²⁷¹ Here, too, copyright constraint functions less generatively than it could. The optimal timing is early. Greater clarity on the ground, not just in the courts, would go a long way toward shifting the timing of constraint earlier in the creative process.

F. Severity

Every constraint comes with a penalty for breach, some great (say, for violating political censorship in authoritarian states) and some trivial (for violating an invented constraint that could be discarded at will). A constraint’s impact on creativity will depend somewhat on its location along a severity spectrum that measures the stakes of noncompliance. Though penalties for expressive activity sometimes involve governmental actors, they operate more

²⁶⁷ See *id.* at 233.

²⁶⁸ See *supra* note 258 and accompanying text.

²⁶⁹ See *supra* notes 201–206 and accompanying text.

²⁷⁰ See PATRICIA AUFDERHEIDE & PETER JASZI, UNTOLD STORIES: CREATIVE CONSEQUENCES OF THE RIGHTS CLEARANCE CULTURE FOR DOCUMENTARY FILMMAKERS (2004), http://www.centerforsocialmedia.org/files/pdf/UNTOLDSTORIES_Report.pdf.

²⁷¹ See James Gibson, *Risk Aversion and Rights Accretion in Intellectual Property Law*, 116 YALE L.J. 882, 905 (2007); Anthony Falzone & Jennifer Urban, *Demystifying Fair Use: The Gift of the Center for Social Media Statements of Best Practices*, 57 J. COPYRIGHT SOC’Y U.S.A. 337, 340 (2010).

frequently on the level of social norms. An artist who wants to be accepted within a particular stylistic community has to play by certain rules. Failure to adhere to those rules could mean failure to gain approval from audiences and peers. For many, that is a powerful penalty.²⁷²

In short, the choice of sanction matters. That may sound banal to a legal audience. To date, however, there has been no empirical investigation of how constraint severity influences the creative process. When social scientists speak of a constraint's burden, they tend to have in mind its scope, rather than its enforcement mechanism.²⁷³ But a toothless constraint, even if broad, would likely have little impact on creativity.²⁷⁴ At the opposite extreme, it's conceivable that a narrow but draconian constraint would discourage creative activity without generating much in return. The issue is partly risk aversion. Individuals will view skirting the constraint's margins as too perilous, particularly where those margins are not perfectly defined.²⁷⁵ More speculatively, high penalties might also hurt engagement. As sanctions increase and the constraint is perceived to be less fair, individuals may cease to view creating around as an intrinsically motivating act.²⁷⁶ Rather than leverage the constraint for creativity, they would simply avoid the domain altogether. Others with a higher risk tolerance might reject the constraint altogether.²⁷⁷ Thus, even if one thinks creating around is socially valuable in principle, high sanctions present a significant danger of over-deterrence.

Copyright manages to fall on different sides of this spectrum simultaneously. Formally, the Copyright Act allows steep statutory damages awards, up to \$150,000 per work infringed.²⁷⁸ Even for those with meritorious defenses, litigation costs alone are prohibitive.²⁷⁹ On the other hand, many copyright owners tolerate arguably infringing downstream reuse,²⁸⁰ and, partly

²⁷² For an extensive discussion of social norms' role in constraining creative choice, see KAL RAUSTIALA & CHRISTOPHER SPRIGMAN, *THE KNOCKOFF ECONOMY: HOW IMITATION SPARKS INNOVATION* 104–22, 177–179 (2012).

²⁷³ See, e.g., Rosso, *supra* note 134, at 578; ELSTER, *supra* note 13, at 279.

²⁷⁴ Relatedly, artificial deadlines are less powerful motivators than real ones. See MULLAINATHAN & SHAFIR, *supra* note 14, at 27 (positing that the ineffectiveness of fake deadlines and fake tickling share a common psychological bond).

²⁷⁵ See Shyamkrishna Balganesh, *Foreseeability and Copyright Incentives*, 122 HARV. L. REV. 1569, 1620 (2009) (noting that “[t]he uncertainty of the standard, if anything, is likely to deter potential users . . . from treading too close to the boundaries of impermissible copying.”).

²⁷⁶ See Teresa Amabile, *How to Kill Creativity*, HARV. BUS. REV., Sept. 1998, at 77 (discussing how a “climate of fear” can undermine intrinsic motivation).

²⁷⁷ See ELSTER, *supra* note 13, at 279 (noting that lack of flexibility may be “so severe as to induce a move to abolish the constraints entirely.”).

²⁷⁸ 17 U.S.C. § 504(c).

²⁷⁹ See, e.g., Depoorter & Walker, *supra* note 261, at 325; PATRICIA AUFDERHEIDE & PETER JASZI, *RECLAIMING FAIR USE: HOW TO PUT BALANCE BACK IN COPYRIGHT* 5 (2011).

²⁸⁰ See generally Tim Wu, *Tolerated Use*, 31 COLUM. J.L. & ARTS 617 (2008).

as a result, many downstream don't pay much attention to those constraints during the creative process.²⁸¹ Those who are most inclined to play with copyrighted expression often have little interest in learning, let alone complying with, what copyright demands. The ideal scenario would require drastically lower penalties, but also drastically higher buy-in from downstream creators. Without both, creating around may be limited to the universe of creators who are both copyright conscious and risk seeking. As I discuss in Part V, decreasing copyright severity is likely to boost creativity not just through the freedoms it opens up, but also through shoring up the way its remaining constraints are perceived.

G. Polarity

Last, and perhaps least important, is the constraint's polarity. A constraint can be either a positive rule, instructing what must be done, or a negative rule, instructing what must not be done. In the language of injunctions, constraints are either mandatory or prohibitory.²⁸²

Copyright law is built on the back of prohibitory constraint. With the exception of attribution requirements for some visual art,²⁸³ copyright speaks only to what is forbidden, not to what is needed. In the history of cultural expression, by contrast, mandatory constraints abound. Indeed, most of the analogies I have offered throughout this Article—metrical verse, compositional structures, plot conventions, cooking competitions—specify requirements for what must be included but not for what must be excluded. One may be tempted to conclude that copyright constraint is therefore a fundamentally different breed than the ones under which creators have historically thrived.

Yet on closer inspection, polarity appears not to have a significant effect on constraint's generativity. Prohibitory constraints inhabit a variety of artistic domains. Music theory, for example, has several. Classical practice proscribes the use of parallel fifths or octaves in voice-leading, as well as doubling the leading tone.²⁸⁴ Throughout the medieval and Renaissance periods, prevailing rules of harmony also forbade the use of an augmented fourth—an interval perceived to be so dissonant that it was nicknamed the

²⁸¹ See, e.g., PATRICIA AUFDERHEIDE ET AL., *supra* note 223, at 25; DICOLA & MCLEOD, *supra* note 10, at 116–17 (describing interviewees' refusal or unwillingness to pay for licenses, regardless of copyright law). The distribution process, however, is a different matter. See *infra* Part IV.F.

²⁸² See *Louis Vuitton Malletier v. Dooney & Bourke, Inc.*, 454 F.3d 108, 114 (2d Cir. 2006) (contrasting mandatory and prohibitory injunctions).

²⁸³ See 17 U.S.C. § 106A.

²⁸⁴ *Parallel (Consecutive) Fifths, Octaves*, in THE HARVARD DICTIONARY OF MUSIC 631 (Don Michael Randle ed., 2003); HOWARD ELMORE PARKHURST, A COMPLETE SYSTEM OF HARMONY 52 (1908).

“devil in music” (*diabolus in musica*).²⁸⁵ Islamic art avoided figural imagery, a constraint that catalyzed an outpouring of calligraphic and geometric designs.²⁸⁶ Lipograms, texts that deliberately omit one or more letters, have been around for millennia.²⁸⁷ In the hands of the right author, like Georges Perec’s 300-page novel *La Disparition* that avoids the letter “e” entirely, this prohibitory constraint stimulates more inventive use of vocabulary.²⁸⁸ The Hays Code, mentioned above, was chock full of generative proscriptions on content.²⁸⁹ Twitter’s 140-character limitation is a prohibitory constraint that has spurred novel expressive styles and, according to many, more focused expression.²⁹⁰

In addition, even mandatory constraints can induce prohibitory ones over the course of creating a work. Earlier choices constrict later ones, as the route taken precludes many otherwise attractive options.²⁹¹ Anyone who has ever written half a rhyming couplet, only to struggle with how to complete it, has already learned that lesson. So has anyone who has tried to excise repeated usage of the same phrases within an article draft. Those of us who have had these experiences probably can recall instances in which having to circumvent one way of expressing an idea led to an unanticipated way. And the expression benefited from that differentiation.

Corroborating this intuition is the fact that many creators succeed within communities that have developed anti-copying norms.²⁹² For the reasons described above, these norms aren’t likely to spread within larger industries. But in those industries where they have, individuals have flourished

²⁸⁵ Tritone, *in id.* at 911.

²⁸⁶ See, e.g., ALAN M. GREAVES, *THE LAND OF IONIA: SOCIETY AND ECONOMY IN THE ARCHAIC PERIOD* 209 (2009); Simons Center for Geometry and Physics, *Geometry and Islamic Art*, Aug. 17, 2010, <http://scgp.stonybrook.edu/archives/984>.

²⁸⁷ See *Lipogram*, *in* THE PRINCETON ENCYCLOPEDIA OF POETRY AND POETICS 809 (Roland Greene et al. eds., 4th ed., 2012)

²⁸⁸ See PAUL SCHWARTZ, *GEORGES PEREC: TRACES OF HIS PASSAGE* 32–33 (1988) (discussing how Perec’s constraints enriched, rather than impoverished, his use of language).

²⁸⁹ See *supra* note 216 and accompanying text.

²⁹⁰ See TINA SEELIG, *INGENIUS: A CRASH COURSE ON CREATIVITY* 111 (2012); (describing various expressive artforms that Twitter’s character limit has generated); Barb Dybwad, *Tweet Success: Why We Love Twitter’s 140 Character Limit*, MASHABLE (Aug. 22, 2009), <http://mashable.com/2009/08/22/twitter-140-character-limit> (arguing that Twitter’s limitations encourage clearer communication because “[w]hen faced with the need for an economy of language, you’re forced to periodically think twice about what exactly it is you’re trying to say.”). Biz Stone, Twitter’s founder and CEO, has been quoted as saying that “Creativity comes from constraint That’s one of the basic rules of Twitter. That 140 characters seems like a constraint, but look what people have been able to do with it.” See Allison Stadd, *Behind-The-Scenes Look at Twitter Co-Founder Biz Stone’s Film With Ron Howard*, MEDIA BISTRO (Feb. 8, 2013, 10:00 AM), http://www.mediabistro.com/alltwitter/biz-stone-ron-howard_b35763.

²⁹¹ See ELSTER, *supra* note 13, at 242.

²⁹² See *supra* notes 219 through 220 and accompanying text.

under the requirement to avoid predecessors' work.²⁹³ To the extent that this phenomenon is generalizable across creative media, it bolsters the case that prohibitory constraint can enhance variability without killing engagement. That copyright prohibits, rather than mandates, does not make an obvious difference in the creativity analysis.

V. GENERATIVE INFRINGEMENT DOCTRINES

Recognizing the generativity of constraint opens up a new vista for assessing copyright's infringement doctrines. Tailored appropriately, those doctrines can be more than just means to secure incentives upstream. They can also be, in the spirit of John Maguire's aphorism, a system of wise restraints that make us creative.²⁹⁴ That system would doubly fulfill copyright's purpose: incentivizing investment in creativity upstream, and promoting creative problem solving and finding downstream.

What might such a system look like? In some fundamental ways, it would look like the system we already have. First, it would place limits on adaptations of protected expression—what we call the derivative work right. Second, it would carve out space for high-variability products—what we call fair use. And third, because it is differentiation from the creator's subjective pool of prior exemplars that drives creativity, it would constrain copying but not chance overlaps with works that the creator had never encountered—what we call the independent creation defense. In other ways, however, it would look different. It would be transparent, easily assessed at the point of creation, and respected by the creative communities that it governs. In this Part, I examine how changing certain copyright constraints, and keeping some others the same, may best generate downstream creativity.

A. Constraints That Help

Start with what copyright gets right. Copyright law assigns the ability to prepare derivative works exclusively to the copyright owner. Others that prepare a derivative work without authorization are not only infringers, but are also denied any copyright protection in the original expression that they contribute to the existing work.²⁹⁵ One could, however, imagine an alternative

²⁹³ See Oliar & Sprigman, *supra* note 219, at 1855–56.

²⁹⁴ In 1936, John Maguire famously described law a “system of wise restraints that make men free.” See Viet D. Dinh, *What is the Law in Law and Development*, 3 GREEN BAG 19, 27 (1999).

²⁹⁵ 17 U.S.C. § 103(a) (providing that “protection for a work employing preexisting material in which copyright subsists does not extend to any part of the work in which such material has been used unlawfully.”). For examples of how this rule plays out in practice, see *Gracen v. Bradford Exchange*, 698 F.2d 300, 302–03 (7th Cir. 1983); *Anderson v. Stallone*, 11 U.S.P.Q.2d (BNA)1161, 1167–69 (C.D. Cal. 1989).

system in which the creator of an unauthorized derivative work would receive copyright protection in the new incremental expression, but nevertheless remain unable to exploit the derivative work without the original owner's permission. That way, downstream and upstream creators would have leverage over each other in bargaining. The downstream creator could not use the old material without permission, but neither could the upstream creator use the new material without permission.

Indeed, such an alternative system is precisely how U.S. patent law handles downstream adaptation. While the Patent Act grants patentees the right to exclude others from practicing the invention, others remain free to design improvements on it.²⁹⁶ As a result, downstream inventors who build on patented technology may receive patents on their incremental improvements, and may then exclude the patentee. These dueling exclusivities have fueled the phenomenon of “blocking patents,” in which neither party can use the downstream adaptation without the other's permission, incentivizing bargaining toward efficient cross-licensing.²⁹⁷

The possibility of incentivizing similar bargaining over expressive adaptations has prompted several scholars to call for a “blocking copyrights” regime.²⁹⁸ Rob Merges suggests that the best explanation for the absence of blocking copyrights is a moral rights–based policy favoring authors' reputational interests.²⁹⁹ Yet viewed through the lens of generative constraint, copyright's derivative work exclusivity has utilitarian appeal as well. The derivative work right limits individuals' ability to repeat the same expressive solutions as their predecessors. As I explained in Part IV, this constraint target has the potential to enhance creativity. It impedes access to the prior exemplars that line the path of least resistance, channeling create-around expeditions that lead to a more diversified stock of expression. That expressive diversity ultimately redounds to society's benefit.

Of course, these low-resistance works are not the only ones that the derivative work right excludes. It also impedes access to some innovative uses of copyrighted content. Translating between languages or turning a novel into a film, for instance, may involve immense amounts of creativity, yet these are quintessentially derivative works within the copyright owner's control.³⁰⁰ Audiences lose out on these works if copyright prevents their production. The

²⁹⁶ See 35 U.S.C. § 154.

²⁹⁷ See generally Robert Merges, *Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents*, 62 TENN. L. REV. 75 (1994).

²⁹⁸ See Kelly Casey Mullally, *Blocking Copyrights Revisited*, 37 COLUM. J.L. & ARTS 57, 65–69 (2013); Lemley, *supra* note 70, at 1074–77; Wendy J. Gordon, *Toward a Jurisprudence of Benefits: The Norms of Copyright and the Problem of Private Censorship*, 57 U. CHI. L. REV. 1009, 1018–20 (1990) (reviewing PAUL GOLDSTEIN, *COPYRIGHT: PRINCIPLES, LAW AND PRACTICE* (1989))

²⁹⁹ See Merges, *supra* note 297, at 2659 n.15.

³⁰⁰ See 17 U.S.C. § 101 (defining a derivative work to include “motion picture version[s]” and “translation[s].”)

question is whether that loss is offset by gains from creating around, plus whatever marginal upstream activity is incentivized. That question is one that opponents of the derivative work right haven't tried to answer.

Thinking about copyright's structure in terms of constraint targets suggests that the answer could be yes. A blocking copyrights regime would still impose a constraint, only with a less generative target. Like existing copyright law, it would prohibit downstream creators from exploiting copyrighted material without permission. Unlike existing law, however, it would channel them toward producing adaptations that are likely to be cross-licensed. For downstream creators interested in reusing copyrighted material, a blocking copyrights regime imposes a mandatory constraint requiring them to produce something attractive to the original copyright owner. That might make for efficient bargaining, but it's risky creativity policy. Channeling downstream energy toward creating works that fit the copyright owner's vision is not a high-variability proposition.³⁰¹

Without a derivative work right, we may get more homogenization.³⁰² That's damaging if the name of the game is creativity.³⁰³ The wider the range of undiscovered appropriate solutions to a problem, the more audiences may miss out when problem solvers become locked in to a single solution. And if audiences value a multiplicity of solutions separately from the content of those solutions, the cost of that lock-in becomes exacerbated. The expressive arts, where appropriateness is often extremely ill-defined and where we desire new works even though there's nothing wrong with the old ones, check both of those boxes. To the extent that the derivative work right stimulates create-around effort, it furthers—not frustrates—copyright's constitutional goal of “stimulat[ing] artistic creativity for the general public good.”³⁰⁴ Thus, although the current derivative works system constrains more broadly than a hypothetical blocking copyrights system, it may also constrain more wisely.³⁰⁵

³⁰¹ See Oren Bracha & Talha Syed, *Beyond Efficiency: Consequence-Sensitive Theories of Copyright*, 29 BERK. TECH. L.J. 229, 274 (2014) (arguing that copyright owners will tend to license only those uses that are “conventional [and] mainstream . . . rather than a subversive or experimental variant”).

³⁰² See *supra* Part IV.B. See also Abramowicz, *supra* note 70, at 321 (employing economic model indicating that “in a world without the derivative right, unauthorized derivative works will tend to be close substitutes for the authorized derivative works. And they will tend to be even closer substitutes for other unauthorized derivative works.”); Hughes, *supra* note 120, at 942 (arguing that “control spread among divergent individuals enhances the diversity of meanings in a culture and provides a valuable barrier against homogenization of ideas”).

³⁰³ Of course, homogenization has positive network effects, like shared participation in culture. But these are separate from, and may work at cross-purposes to, generating creative outputs.

³⁰⁴ *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975).

³⁰⁵ This does not necessarily mean that blocking patents are themselves unwise. One could make the case that, relative to copyrightable subject matter patentable, patentable subject matter features (1) less risk than other successful but undiscovered solutions lie outside the

A recent experimental study on open and closed innovation in software coding supports this theory.³⁰⁶ Participants entered into a two-week contest to see who could produce the best design for a complex bioinformatics algorithm. In one group, participants submitted solutions that were then available to all other participants in the group. Those participants were then free to build off of the existing solutions. In another group, submissions couldn't be seen by others until the end of the contest. The study found that when solutions were available for all to use, participants experimented less and submitted a more homogeneous set of solutions.³⁰⁷ While free access to others' solutions enabled iterative improvements, it also instigated more path dependency, risking lock-in to suboptimal solution paths.³⁰⁸ The study's designers concluded that where a problem is susceptible to a wide range of successful solutions, closed innovation systems lower the likelihood that such lock-in will occur. Copyright's derivative work right may serve a similar function. By limiting access to certain adaptations, copyright diversifies the stock of creative expression.³⁰⁹

One might also imagine a system that restricted *any* use of protected expression. Part III.C discussed how such a regime would multiply constraint scope exponentially, excising not just particular products but also a host of generative processes. This is no mere hypothetical. It has already been occurring to varying degrees within several creative industries.³¹⁰ Nothing in this Article's constraint model, the sources from which it draws, or real-life creative practice suggest that a constraint scope this wide-ranging confers significant benefits downstream.

Here, of course, is where fair use comes in. I am undoubtedly saying nothing new in recognizing that fair use has a critical role to play in limiting constraint scope.³¹¹ Seldom recognized, however, is that fair use itself constrains creators—in the best possible way. By providing a bounded range

path that the patentee has chosen; and (2) fewer consumers who value differentiation as an independent virtue. These distinctions would make blocking patents more attractive than blocking copyrights. The less concerned we are about finding other paths, the less costly path-dependency is.

³⁰⁶ Kevin J. Boudreau & Karim R. Lakhani, *How Disclosure Policies Impact Search in Open Innovation*, Harvard Business School Technology & Operations Mgt. Unit Working Paper, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2288746 (Nov. 8, 2013).

³⁰⁷ *Id.* at 22.

³⁰⁸ *Id.* at 29.

³⁰⁹ To the extent that functional expression like software features a narrower range of potential solutions for any given problem, path-dependency is less risky. The theory described here, like some other copyright theories, may thus be an uneasy fit for software. *Cf., e.g.,* Fromer, *supra* note 25, at 1505–06.

³¹⁰ *See, e.g.,* AUFDERHEIDE & JASZI, *supra* note 270; Gibson, *supra* note 271, at 903–06.

³¹¹ For a recent encapsulation, see generally AUFDERHEIDE & JASZI, *supra* note 279. *See also* Samuelson, *supra* note 232, at 2617 (arguing that the common denominator of all fair uses is as a limitation on the copyright monopoly).

of unlicensed copying that may be conducted, fair use serves as a mandatory constraint on downstream creators just like the hypothetical blocking copyright would, but with one critical difference. Instead of steering activity in the same direction as the upstream creator would go, it steers that activity toward *transformation*.³¹² This is the generative constraint target par excellence. Fair use's emphasis on transformativeness for adaptive uses is a high-variability restriction on how individuals may copy from the past. Through its selective excludability, fair use doctrine engenders its own underappreciated form of creating around.

That selective excludability need not crowd out expressive processes that rely on appropriation from the copyright owner. Instead, it can push those processes toward variability. It would preserve the discursive community-building that Scott Hemphill and Jeannie Suk call flocking, while still stimulating differentiation within the flock.³¹³ One can celebrate musical remixes, for instance, without celebrating a regime in which every musical remix is categorically privileged. When the DJs discussed in Part IV create around copyright by pushing sampling into ever more playful territory,³¹⁴ the system is working.

The possibility of unfair use, fair use's negative space, deters a potential entitlement mentality regarding use of cultural goods. Fair use offers potential copiers abundance; unfair use guards against overabundance. Courts find that downstream creators making otherwise transformative use of protected expression cannot copy more than is reasonable to solve the expressive problem.³¹⁵ Fair use guidelines used within communities of practice encourage individuals to borrow expression, so long as they borrow frugally.³¹⁶ And individuals who are conscious of fair use's limits can harness them as artistic

³¹² See Balganes, *supra* note 65, at 261 (discussing how fair use “signal[s] to potential defendants the range of behavior that will be tolerated before liability is imposed.”).

³¹³ Hemphill & Suk, *supra* note 9, at 1152–53 (2009).

³¹⁴ See *supra* notes 201–206 and accompanying text.

³¹⁵ See, e.g., *Elvis Presley Enters., Inc. v. Passport Video*, 349 F.3d 622, 628–29 (9th Cir. 2003) (holding that although a documentary film's inclusion of historical Elvis television clips was transformative, defendants nevertheless infringed because of the clips' length, which were “in excess of this benign purpose” and instead “simply broadcast for entertainment purposes that Plaintiff rightfully owns”), *abrogated on other grounds*, *Flexible Lifeline Sys., Inc. v. Precision Lift, Inc.*, 654 F.3d 989 (9th Cir. 2011) (per curiam); *Warner Bros. Ent'mt Inc. v. RDR Books*, 575 F. Supp. 2d 513, 540–48 (S.D.N.Y. 2008) (holding that an unauthorized *Harry Potter* “lexicon” had a transformative purpose as a reference work, but nevertheless infringed by quoting verbatim hundreds of words at a time, “in excess of its otherwise legitimate purpose of creating a reference guide”); cf. *Blanch v. Koons*, 467 F.3d 244, 258 (2d Cir. 2006) (finding that artist's copying of the plaintiff's photograph was fair use where the artist copied “only that portion of the image necessary to evoke a certain style of mass communication”).

³¹⁶ See AUFDERHEIDE & JASZI, *supra* note 279, at 177–85 (asking those considering relying on fair use to determine their expressive purpose and whether they've taken more than is necessary to accomplish it).

challenges during the creative process.³¹⁷ There is such a thing, the doctrine instructs, as too much.

The virtues of trimming expressive excess should be familiar to most of us. Authors convey themselves more clearly with word limits than without. A scholar who is forced to distill a single-sentence thesis tends to write more clearly than one who is not. An idea may remain muddled unless its proponent is compelled to reduce it to an elevator pitch. These constraints compel more precise problem definition and solution. Through its negative space, fair use doctrine works much the same way. It is copyright law's built-in page count.

Another conceivable variation on copyright's infringement doctrines is elimination of the independent creation defense. Current law excuses any overlap between works, even identical ones, so long as that overlap is fortuitous.³¹⁸ In other words, only copying counts. As Judge Learned Hand memorably explained the matter, "[I]f by some magic a man who had never known it were to compose anew Keats's *Ode on a Grecian Urn*, he would be an 'author,' and, if he copyrighted it, others might not copy that poem, though they might of course copy Keats's."³¹⁹ Less improbably, musicians from time to time converge around substantially similar melodies, forcing courts to determine whether copying was involved.³²⁰ Patent law, by contrast, contains no such defense. The patentee's exclusive rights are good against the world, even those who independently discover the invention.³²¹

Why not offer a similarly robust right to copyright owners? A number of theories have been offered, pointing to copyrights' high information costs;³²² minimal eligibility requirements;³²³ and goal of generating abundant, even if not efficient, expression.³²⁴ Most recently, Fromer has offered a supply-side theory rooted in the psychology of artistic creativity.³²⁵ Because audiences value creative problem finding in the arts more than in the sciences,

³¹⁷ See Kleon, *supra* note 12 (providing poet's account of how fair use's "legal constraints can actually be turned into artistic constraints. Rather than limiting my creativity, these constraints make the poem better.").

³¹⁸ See, e.g., *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 346 (1991); *Mag Jewelry Co., Inc. v. Cherokee, Inc.*, 496 F.3d 108, 116 (1st Cir. 2007); *Boisson v. Banian Ltd.*, 273 F.3d 262, 270 (2d Cir. 2001).

³¹⁹ *Sheldon v. Metro-Goldwyn Pictures Corp.*, 81 F.2d 49, 54 (2d Cir. 1936).

³²⁰ See, e.g., *Jones v. Blige*, 558 F.3d 485 (6th Cir. 2009); *Three Boys Music v. Bolton*, 212 F.3d 477 (9th Cir. 2000); *Bright Tunes Music Corp. v. Harrisongs Music, Ltd.*, 420 F. Supp 177, 179–80 (S.D.N.Y. 1976); *Fred Fisher, Inc. v. Dillingham*, 298 F. 145, 148–49 (S.D.N.Y. 1924) (Hand, J.).

³²¹ See, e.g., *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 478 (1974).

³²² Clarisa Long, *Information Costs in Patent and Copyright*, 90 VA. L. REV. 465, 526–33 (2004).

³²³ Dale P. Olson, *Copyright Originality*, 48 MO. L. REV. 29, 34 (1983).

³²⁴ PAUL GOLDSTEIN, *COPYRIGHT: PRINCIPLES, LAW AND PRACTICE* § 2.2.1, at 63–64 (1989).

³²⁵ Fromer, *supra* note 25, at 1492–93.

“copyright law places greater value on rewarding authors for using their pen to convert their valuable and emotional and subjective concepts into an artistic product than on making sure only one problem solution receives the prize of copyright.”³²⁶

The analysis here suggests a separate psychological explanation. The cognitive mechanisms of creativity require differentiation from prior models that occupy the problem space that an individual is exploring.³²⁷ By diverging from any such models, individuals are engaged in creative cognition—regardless of whether the fruits of their cognition resemble the fruits of others’. Copyright law reasonably predicts that the surest path to a creative culture is for individuals to differentiate themselves from their subjective pools of exemplars. To eliminate the independent invention defense would effectively mandate a single, universal pool. In principle that might be possible if one could devise a reasonably searchable copyright index, an almost certainly infeasible task. The practical result would be excessive constraint scope and poor constraint clarity. A constraint that broad and unclear would dissipate any generative benefit that it might confer. Requiring differentiation only from the creator’s personal path of least resistance is a far less costly way to induce the creative cognition that copyright law seeks.

B. Constraints That Hurt

Despite these positive design features, two aspects of the copyright system diminish its constraints’ usefulness. The first is a question of clarity and timing. Unpredictable constraints make for predictably safe expression. It’s difficult to create around copyright law effectively while its boundaries remain hard to pin down. The second is a question of source and severity. Many downstream creators don’t engage with copyright’s imposed constraint in a productive way. For most people, compliance with copyright law will not be intrinsically motivating. I am optimistic that the first problem is already on its way to being remedied. The second problem is cause for greater concern.

A growing descriptive literature shows that fair use, copyright’s most famously fuzzy standard, is clearer than previously thought.³²⁸ In addition, industries ranging from documentary film to online video to media education have successfully implemented codes of best practices that are teaching both individual creators and the intermediaries on whom they rely where the constraint boundaries fall.³²⁹ This combination of scholarship and grassroots

³²⁶ *Id.* at 1493.

³²⁷ See *supra* Part III.A.

³²⁸ See, e.g., Matthew Sag, *Predicting Fair Use*, 73 OHIO ST. L.J. 47 (2012); Samuelson, *supra* note 232; Michael J. Madison, *A Pattern-Oriented Approach to Fair Use*, 45 WM. & MARY L. REV. 1525 (2004).

³²⁹ For a review of these codes, see AUFDERHEIDE & JASZI, *supra* note 279, at 127–47.

efforts not only improves the clarity of copyright constraint, but, in so doing, shifts its timing as well. As the effect of restriction moves earlier in the creative process, individuals grow better equipped to create around it.³³⁰ They both gain the freedom that fair use provides and the serendipity of unanticipated cultural encounters that navigating unfair use generates. The more that copyright law can fuel such line drawing, the more productive copyright constraint will be for downstream creators.

As clarity and timing improve, creators may grow less frustrated with copyright law as a whole. But much more needs to be done before infringement avoidance becomes a reliable source of intrinsic motivation. The severity and source of copyright constraint looms large here. In popular perception, copyright law is rotten. The public has increasingly come to view copyright as heavy-handed corporate protectionism, “a juggernaut” that is “crushing cherished creative and expressive freedoms.”³³¹ That perception, combined with the ease of ignoring the law during the act of creation (as distinguished from the act of distribution, typically controlled by copyright-conscious intermediaries), makes this constraint a burden. Engagement is bound to suffer.³³² While copyright’s formal constraints are structured to promote downstream creativity, that potential may lay dormant for many until the law does something to shed its negative image.

Copyright enforcers and policymakers thus have some rehabilitation work to do before society is likely to see a fully blossomed creating around effect. How to go about doing that work is a complex subject in its own right.³³³ But a good start would be scaling back some of the “long and strong” excesses that have given copyright its bully persona without delivering much incentive value upstream.³³⁴ Take, for example, copyright’s current term length, which in 1998 was extended from fifty to seventy years past the author’s death.³³⁵ Because of discounting to present value, these extra decades do little to fuel upstream production.³³⁶ The term extension’s most visible

³³⁰ See *supra* Part IV.E.

³³¹ Paul Goldstein, *Copyright’s Commons*, 29 COLUM. J.L. & ARTS 1, 2 (2005); see also Ginsburg, *supra* note 223, at 61.

³³² See PATRICIA AUFDERHEIDE ET AL., *supra* note 223, at 25 (reporting on artists who see copyright as an impediment to creativity and so choose not to think about it).

³³³ See Ginsburg, *supra* note 223; Jessica Litman, *Real Copyright Reform*, 96 IOWA L. REV. 1, 15 (2010); John Tehranian, *Infringement Nation: Copyright Reform and the Law/Norm Gap*, 2007 UTAH L. REV. 537, 538.

³³⁴ AUFDERHEIDE & JASZI, *supra* note 279, at 16.

³³⁵ See Sonny Bono Copyright Term Extension Act of 1998, Pub. L. No. 105-298 (1998).

³³⁶ Brief of George A. Akerlof et al. as Amici Curiae in Support of Petitioners at 12, *Eldred v. Ashcroft*, 537 U.S. 186 (2003) (No. 01-618); Robert P. Merges, *One Hundred Years of Solicitude: Intellectual Property Law 1900–2000*, 88 CAL. L. REV. 2187, 2236–37 (2000) (“From an incentive point of view, the Act is virtually worthless; viewed from a present-value perspective, the additional incentive to create a copyrightable work is negligible for an extension of copyright from life-plus-fifty years to life-plus-seventy years.”).

legacy has not been marginal creative works newly incentivized, but instead a popular backlash against the entire copyright system.³³⁷

A similar lightning rod is the Copyright Act's statutory damages scheme, which permits awards of up to \$150,000 per work infringed even in the absence of actual damages.³³⁸ These sanctions are seldom if ever imposed for infringement stemming from downstream adaptation.³³⁹ Nevertheless, the specter of becoming the occasional exception to the rule chills a great deal of lawful downstream creativity.³⁴⁰ Commentators today speak of statutory damages in the same breath as the punitive excesses of Prohibition.³⁴¹ Formally excusing creative adaptations from the statutory damages regime (or at least its upper reaches) could enhance copyright's perception among downstream creators without much risk of losing marginal works upstream.

In addition, educators responsible for copyright training could do more to explain how copyright restrictions could be leveraged as artistic challenges. There is some precedent for this sort of constraint "brand management." Creativity scholars have found that intrinsic motivation remains high, even in the face of extrinsic motivators, when individuals are expressly told about extrinsic motivation's potential negative effects and the importance of remaining engaged in the task.³⁴² Society will get more creativity out of the copyright system if not only copyright scholarship, but public copyright discourse more generally, comes to recognize the value of creating around.

CONCLUSION

Constraint has gotten a bad rap. We should not expect, as so much of current copyright scholarship does, that restricting the choice set of downstream *creators* necessarily restricts downstream *creativity*. This Article has argued that, on the contrary, some amount of restrictiveness is actually desirable. Whether restriction will help or hurt depends on what is restricted,

³³⁷ See Ben Depoorter, *The Upside of Losing*, 113 COLUM. L. REV. 817, 837–38 (2013) (describing how a failed constitutional challenge to Congress' extension of the copyright term "became a symbol representing the darker side of the expansion of intellectual property laws").

³³⁸ 17 U.S.C. § 504(c); see Ben Depoorter, et al., *Copyright Backlash*, 84 S. CAL. L. REV. 1251, 1266 (2011) (recounting "public sentiment that the awards [against individual infringers] are disproportionate and excessive").

³³⁹ See AUFDERHEIDE & JASZI, *supra* note 279, at 32. *But see* *Rogers v. Koons*, 960 F.2d 301, 313 (2d Cir. 1992) (remanding the case to the district court with the observation that, because of "wilful and egregious behavior," appropriation artist Jeff Koons "may be a good candidate for enhanced statutory damages").

³⁴⁰ See, e.g., Joseph P. Liu, *Copyright and Breathing Space*, 39 COLUM. J.L. & ARTS 429, 429 (2007) (noting statutory damages' "well-documented" chilling effect).

³⁴¹ See, e.g., Depoorter, *supra* note 338, at 1269; Donald P. Harris, *The New Prohibition: A Look at the Copyright Wars Through the Lens of Alcohol Prohibition*, 80 TENN. L. REV. 101 (2012).

³⁴² See SAWYER, *supra* note 131, at 80.

how it is restricted, and how difficult it is to create around.

Drawing from psychological research, I've offered a predictive model of the surprising ways in which copyright constraint can stimulate downstream creativity, and the not-so-surprising ways in which it can stifle it. What is needed now is better empirical investigation of how these effects are actually playing out in individuals' and firms' real-life creative work. Anecdotal evidence shows that copyright restrictions are indeed generative for some. But we lack a fine-grained understanding of who is benefiting, who isn't, and what explains the difference.

Measuring creative output will likely be an ineffective approach. As copyright scholars well know from trying to assess copyright constraint's downside, "[e]vidence of works not created because of [licensing] costs is difficult to obtain, as it is evidence of a negative."³⁴³ The same is true of constraint's upside. Many ignore copyright restrictions, and we don't know what works they might have created if compelled to create around. On both sides, we can legitimately wonder about the road not taken.

Both ethnography and controlled experimentation geared toward the model I have presented here should offer clearer windows into how creative cognition responds to legal constraint. What has held such research back is the fundamental misunderstanding that this Article has sought to correct. Information may want to be free, but creativity does not.

³⁴³ Loren, *supra* note 6, at 14.