

Allocation and Uncertainty: Strategic Responses to Environmental Grandfathering

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I. INTRODUCTION

In this paper, I address questions relating to government's decision to allocate property rights in a resource to societal actors based upon, and in proportion to, those actors' prior behavior with respect to the resource at issue. First, assuming that government wishes to distribute property rights based upon a "grandfathering" system, how should the government proceed if it wishes to avoid actors inefficiently engaging in a behavior to secure (additional) property rights? The answer, I will argue, is that the government should allocate the property rights based upon a time period that precedes the announcement of the intent to allocate such grandfathered rights. Second, how should government respond once societal actors begin to anticipate, and therefore to act in anticipation of, such grandfathering regimes? Here, I will argue that the government should resort to basing property allocations on constrained randomly varying criteria. Third, harkening back to the first question, why should we expect government (i) to wish to employ a grandfathering regime, yet also (ii) to wish to cabin the ability of societal actors to "take full advantage" of grandfathering opportunities? Here, I will raise considerations of public choice, and advance both a pessimistic and an optimistic account of this phenomenon.

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As resources become scarce, governance schemes to allocate resources, and rights of access to resources, become more plentiful. Governments often choose to afford societal actors who used the resource before the advent of the regulatory regime better treatment than societal actors who wish to gain access to the resource after the introduction of regulation. When dealing with an exhaustible resource, government will often go beyond simply limiting access to the resource to a defined group of actors, but also impose limits on how much of the resource any societal actors may use up in a given time period. The initial allocation of permits or allowances (which may subsequently be tradable) can once again be based upon (and at least in rough proportion to) societal actors' rate of depletion of the resource up to that point.

Such so-called "grandfathering" regimes are common, for example, in the areas of land use regulation and environmental law. There are several reasons that might explain a government's decision to resort to such a system: a desire to reward prior good behavior, a desire to vindicate people's expectations, administrative ease, or a need (or perceived need) to buy the acceptance of those who will "lose" under the new regime.

Grandfathering-based systems make initial allocations in accordance with a rule of first possession: The allocation of resource access in this way gives rise to a race to capture future resource access, on top of the then-existing race to capture the resource itself. But awarding property to the first possessor creates an incentive for societal actors to engage in a race to capture the permits. Commentators have elucidated the "tragedy of the commons" nature of the race and have criticized the race for creating incentives for competitors to expend inefficiently too much effort toward winning, and for causing inefficiently early distribution—and depletion—of the resource at issue.

In order to avoid creating an incentive for actors to increase their current activities in order to receive a larger allocation of access to the resource in future, the government may base the allocations not on current activities, but on recent activities that predate the announced intention to implement the limitations on resource access. Such systems have become increasingly more common in the context of environmental and natural resource regulation. For example, fishery quotas authorized under federal law are sometimes allocated based upon legal fish landings in years before the regulation was in place.

Reliance upon what I will call "retrospective allocation" methods seeks to solve the problem of excessive behavioral modification by

introducing some measure of legal uncertainty. Retrospective allocation may be seen as a variant of the “race to capture” where the precise terms—or perhaps even the fact that there *is* a race—remains unannounced. If prospective participants in a race don’t know that a race is taking place—or at least don’t know what will be measured to determine who wins the race—then they can’t effectively alter their behavior to guarantee a victory. Because of the legal uncertainty, it is more difficult—and therefore less of an incentive is created—for societal actors to modify their behavior in order to win the race.

Over time, however, the outcome may be different. After societal actors have seen introduced a number of truly unexpected retrospective allocations—that is, races where the participants truly have no idea that any race is afoot—they may begin to anticipate them. This may manifest itself in two ways. First, societal actors who anticipate the impending introduction of a property allocation device may alter behavior based upon speculation as to what the allocation device will look like. Second, societal actors who anticipate the impending introduction of an allocation device may engage in another kind of race: a race to capture the regulatory mechanism so as to ensure that the allocation device will reward them and not others.

For retrospective allocation to maintain its effectiveness on an ongoing basis, the criteria for winning allocations must be changed over time. In effect, to avoid retrospective allocation devolving into a standard race as prospective participants learn the relevant criteria, the criteria must be varied, unpredictably. The more that the variation is unpredictable and seemingly random, the more effective the retrospective allocation will continue to be at avoiding overexpenditures and resource depletion.

The public choice question remains as to why the legislature, by reducing the chances of regulatory capture, would opt to forgo the chance to collect economic rents. Indeed, the mere fact that rights are being “grandfathered” suggests that some rent-seeking has already successfully taken place. A pessimistic answer might be that, even with some form of retrospective allocation in place, the legislature has enough other means remaining to reward rent-seeking *sub rosa*. In this way, the legislature can have its cake and eat it, too: It can announce an allocation scheme that on the surface seems to allocate property fairly, if mildly unpredictably, while at the same time distributing valuable interests to preferred constituents in a manner that lies more behind the scenes.

A more optimistic answer is that the legislature, rather than challenge strong, preexisting norms, opts instead to devolve authority on a regulatory body that itself is not beholden to any particular interest group. For example, in the case of fisheries, community norms may be especially strong, and federal law directs that quota systems be designed by fishery councils that include local representatives as well as national government representatives.

The arguments in this Paper are important for several reasons. First, the Paper sheds light on a growing, yet underexamined, method of initial allocation. One might argue that the initial allocation doesn't matter: The trading of rights will result ultimately in an efficient allocation of the rights, and therefore of the underlying resource.¹ This argument fails for a few reasons. As a threshold matter, while trading has tended to accompany the use of retrospective allocations in current environmental and natural resources law, there is no theoretical reason that it must.² Even with trading, however, initial allocations are of import. First, the efficient final allocation of the resource will result only under the unlikely assumption that transaction costs are nonexistent or at least very low; in the far more likely setting of positive transaction costs, the initial allocation may go a fair way toward determining the final allocation.³ Second, even if the same final allocation will result, the initial allocation will have an effect upon the distribution of wealth. Indeed, the importance of this distribution choice is evidenced by the extensive lobbying⁴ and litigation⁵ that often accompany

¹ Cf. *Michigan v. U.S. EPA*, 213 F.3d 663, 676 (D.C. Cir. 2000) (“If transaction costs were zero, the only effect of the initial assignment of cutbacks would be distributional: firms would make only the cheaper cutbacks, but firms with high emission-reduction costs would buy allowances from those with low costs and thereby transfer wealth to them.”).

² Cf. Jonathan Remy Nash, *Framing Effects and Regulatory Choice*, 82 NOTRE DAME L. REV. 313, 337-38 (2006) (“Viewed from the perspective of property rights, command-and-control regimes appear as pollution permit regimes under which the permits are not tradable separate from the underlying property.”).

Consider also the case of amnesty for illegal immigrants, which has, as I discuss below, similarities to retrospective allocation, *see infra* text accompanying note 109, but where any rights that are conferred are not tradable.

³ Cf. *Michigan*, 213 F.3d at 676 & n.3 (D.C. Cir. 2000) (noting in general that “transaction costs notoriously are not zero,” and that, in the context of the proposed nitrogen oxides trading system there at issue, “[a] glance at EPA's regulations for allowance trading will convince any doubter that transaction costs can safely be expected to be substantial”); Jonathan Remy Nash, *Taxes and the Success of Non-Tax Market-Based Environmental Regulatory Regimes*, in 5 CRITICAL ISSUES IN ENVIRONMENTAL TAXATION (forthcoming 2008) (arguing that federal income tax treatment may impede trading of tradable pollution permits).

⁴ See, e.g., Lisa Heinzerling, *Selling Pollution, Forcing Democracy*, 14 STAN. ENVTL. L.J. 300, 328-32 (1995) (detailing the substantial lobbying that accompanied the drafting

retrospective allocations. Third, the allocation of rights may have significance beyond the simple monetary realm. For example, the ability to continue to pursue a resource may be embedded in individual and community life choices, as is often the case for fishing rights.⁶ Fourth, all these problems will be magnified to the extent that, as is often the case, new allocations are undertaken annually such and the initial allocative scheme persists for many years.⁷ Indeed, creating an initial allocation scheme generally creates along with it an incentive among beneficiaries to perpetuate that scheme.⁸

The Paper's second important contribution is that the use of uncertainty in allocating grandfathered rights provides an important caveat to the law and economics literature on legal transition relief. That literature takes the general view that transition relief is inadvisable in that it discourages societal actors from actively anticipating legal transitions. This Paper argues that, somewhat to the contrary, an ability to anticipate with absolute certainty may create a suboptimally large incentive to conform one's behavior.

Third, along similar lines, an understanding of retrospective allocations may change our perceptions of grandfathering generally. The literature on transition relief sometimes characterizes grandfathering as a "necessary evil": In order to make a new legal regime politically feasible, it may be necessary to compensate those who would do badly under the new regime. Yet, insofar as retrospective allocation methods constrain government discretion, they seem to exhibit elements of fairness that one would not expect if they were purely designed to compensate politically

of the allocation provisions of the national sulfur dioxide trading system under the Clean Air Act Amendments of 1990).

⁵ See, e.g., *Alliance against IFQs v. Brown*, 84 F.3d 343 (9th Cir. 1996) (litigation challenging allocation of fisheries quotas).

⁶ See, e.g., John Tierney, *A Tale of Two Fisheries*, N.Y. TIMES, Aug. 27, 2000, sec. 6, p. 38 (describing someone, a deckhand on a New England fishing boat for 11 years, who didn't like the notion that, under a tradable fishing quota system, newcomers might have to buy their way into the fishery: He "was hoping soon to get his own boat. 'I don't want the door shut on me,' he said. 'I've put a lot of time into this business. That's not fair.'").

⁷ For example, Phase I of the national sulfur dioxide trading system was in effect from 1995 to 1999, during which period a single allocation scheme was in effect and controlled annual sulfur dioxide emission allowance allocations. See Clean Air Act § 404(a), (e), 42 U.S.C. § 7651c(a), (e). Under Phase II, which began in 2000 and will remain in effect through 2009, a different—but still a single—scheme controls annual allocations. See *id.* §§ 402(28), 405, 42 U.S.C. §§ 7651a(28), 7651d.

⁸ See Jonathan Remy Nash & Richard L. Revesz, *Grandfathering and Environmental Regulation: The Law and Economics of New Source Review*, 102 NW. U. L. REV. 1677, 1729 (2007).

powerful losers. Indeed, retrospective allocations may be justified on grounds of fairness where not to grandfather would effect large, unwanted changes on individuals' lives and on communities.

Fourth, an understanding of retrospective allocation may be of value beyond just the area of allocating grandfathered rights to access and deplete natural resources. As I note below,⁹ the issues I consider here have analogies in diverse fields, such as the granting amnesty for illegal immigrants, and evaluating and assessing academic actors and institutions.

This Paper proceeds as follows. In Part II, I explicate the notion of retrospective allocation. I also provide examples of retrospective allocation that have been put into practice in recent years. In Part III, I set out the benefits and costs of retrospective allocation as compared to other possible allocative approaches.

In Part IV, I explain the evolution of retrospective allocation. I start by explaining how basic retrospective allocation evolves from the setting where races to capture may initially hold sway. I next explain how the design of retrospective allocation regimes must evolve in order to retain some level of uncertainty in order to avoid allowing societal actors to take advantage of anticipation of the implementation of retrospective allocations.

In Part V, I consider the difficult question of why, even assuming that retrospective allocations are a logical improvement over the traditional race, regulators would want to adopt them. Specifically, if the problem with the race to capture is people "gaming the system," then the best possible response would be simply to auction off all property rights, i.e., to eliminate grandfathering. Assuming (as seems to be the case) that regulators aren't willing to do that, why then would they be willing to offer even an incremental improvement? I offer two explanations for this phenomenon, one grounded in norms and the other grounded in public choice. I first argue that, in certain settings, strong norms may restrict government's ability to eliminate preexisting rights, while the desire to preserve the resource supply compels the government to take some action. Second, I argue that the evolution toward retrospective allocation is not only logical from an efficiency standpoint, but also is the next logical step from the standpoint of public choice.

⁹ See *infra* Part VI.

In Part VI, I discuss briefly possible applications for the analysis here in other fields. A brief conclusion follows.

II. THE CONTOURS OF RETROSPECTIVE ALLOCATION

In this Part, I examine the contours of retrospective allocation. I offer a basic definition and some examples.

In order to understand retrospective allocations, consider two paradigmatic settings in which retrospective allocation has arisen. Consider first a setting in which societal actors initially may freely access and deplete a resource, presumably under a rule of first possession.¹⁰ The capture and ultimate use of the resource is societally desirable. However, perhaps because of the deleterious effects of the “race to capture” to which the rule of first possession gives rise,¹¹ the government decides to institute a regulatory regime that will restrict access to, and the freedom to deplete, a resource. The regime is said to “grandfather” preexisting users if it does

¹⁰ See Dean Lueck, *The Rule of First Possession and the Design of the Law*, 38 J.L. & ECON. 393, 393 (1995) (“First possession rules are the dominant method of initially establishing property rights.”).

¹¹ Perhaps most commonly associated with the celebrated fox-hunt case, *Pierson v. Post*, 3 Cai. R. 175 (1805), first possession can be conceptualized to invoke three elements: First, there is a property interest to be awarded. Second, that interest is to be awarded to the party who wins the race to capture—that is, to the party who captures the property first. Third, the definition of “capture” is defined on a case-by-case basis, by reference to the particular circumstances and policy considerations raised by the property interest there at issue.

The rule of *Pierson v. Post* has been adapted for use in numerous other settings. For example, versions of the race have been used to award property interests in other sorts of wild animals, see, e.g., *Ghen v. Rich*, 8 F. 159 (D. Mass. 1881), radio frequencies, see Carol M. Rose, *Possession as the Origin of Property*, 52 U. CHI. L. REV. 73, 75 (1985), and baseballs, see, e.g., *Popov v. Hayashi*, No. 400545, 2002 WL 31833731 (Cal. Super. San Francisco Cty. Dec. 18, 2002). More generally, it has been applied in the context of the allocation of a publicly held natural resource portions of which are reduced to private ownership as they are captured and removed from the commons. (The race to capture may be conceived of narrowly or broadly in this regard. See, e.g., Jason Scott Johnston, *The Rule of Capture and the Economic Dynamics of Natural Resource Use and Survival under Open Access Management*, 35 ENVTL. L. 855, 856 (2005) (distinguishing between races for commonly-owned and publicly-owned open-access property, and between rules that award only what one in fact captures as opposed to rules that grant a first possession the right to harvest the entire resource); Lueck, *supra* note 10, at 396 (distinguishing between races to capture that award the victor the entire stock and races to capture that award the victor simply some of the flow from the stock).)

On the deleterious effects of the race to capture, see *infra* text accompanying notes 83-85.

not subject to regulation those who engaged in the activity before it took effect.¹²

Limiting access to the resource without a cap on depletion may be insufficient, however. Continued access to an exhaustible natural resource will often continue to result in its unacceptably excessive depletion. It has thus become increasingly common for the government to create a permit system under which societal actors may only access and deplete the resource to the extent that they hold permits authorizing them to do so. Each permit allows the holder to exhaust a set amount of the resource¹³; permits are limited in number and freely tradable.¹⁴ The permits themselves become tantamount to property rights¹⁵ to obtain property rights in the underlying resource. In accordance with the general notion of grandfathering, the permits are initially allocated to those who previously had access to the resource, and substantially in proportion to the extent to, or rate at, which they previously enjoyed depleting it. (In general, the total number of permits is set at or, more commonly, below current levels of depletion. Thus, the effect of such a system is to cap the total amount of resource depletion.) In effect, then, those who engaged in the relevant behavior during the relevant time period captured not only the resource that

¹² Thus, for example, zoning ordinances generally grandfather non-conforming uses.

¹³ For example, each allowance under the national sulfur dioxide emissions trading program authorizes its holder “to emit, during or after a specified calendar year, one ton of sulfur dioxide.” Clean Air Act § 402(3), 42 U.S.C. § 7651a(3). It is theoretically possible instead to issue allowances in units of environmental degradation (which may differ from emissions). See Jonathan Remy Nash & Richard L. Revesz, *Markets and Geography: Designing Marketable Permit Schemes to Control Local and Regional Pollutants*, 28 *ECOLOGICAL* L.Q. 569, 618-21 (2001).

¹⁴ It is possible to construct trading regimes under which permits are tradable only within distinct regions, see Nash & Revesz, *supra* note 13, at 615-18; *id.* at 589-94 (discussing rejected proposals to have two separate regions for sulfur dioxide allowance trading), or to impose constraints on trades that traverse regional boundaries, see *id.* at 611-12 (discussing a two-zone air pollutant trading program in the Los Angeles metropolitan area, under which trades are allowed to proceed from the coastal zone to the inland zone, but not vice versa); *id.* at 618 (discussing the possibility of introducing exchange ratios for trades that traverse zonal boundaries).

¹⁵ See Nash, *supra* note 2, at 335-36. Note that many regulatory regimes, including in particular the Clean Air Act’s sulfur dioxide allowance trading program, disclaim the notion that the programs’ permits are property, see, e.g., Clean Air Act § 403(f), 42 U.S.C. § 7651b(f) (characterizing an allowance under the program as “a limited authorization to emit sulfur dioxide” that “does not constitute a property right,” and noting that “[n]othing in this subchapter or in any other provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization”), although one might question whether such a provision alone is sufficient to preclude a Takings claim, see Jonathan Remy Nash, *Tradable Pollution Permits and the Takings Clause* (working paper).

they sought (and could claim under the rule of capture), but they also turned out to have captured (unbeknownst to them at the time) valuable allocation rights that will allow them to continue to access and deplete the resource (or to sell those rights and thereby to profit) in the future.

Another paradigmatic setting for the emergence of retrospective allocation is a situation in which societal actors have been engaging in the process of producing a commodity—say widgets. Widget production is societally desirable, but also necessitates (at least under current technological conditions) the generation of a pollutant—say an air pollutant—as a byproduct. At low levels of production, the air pollutant does not inflict substantial harm, but over time as widget production intensifies—both in terms of the absolute number of widgets produced and the number of widget plants, the pollution effects become problematic. In effect, the natural resource of clean air is being depleted. As above, the government decides to restrict access to the resource, i.e., to restrict the set of actors who may emit the pollutant and thus deplete the resource. Also as above, the government decides to control the amount of depletion using a permit system, and to allocate the permits access via a system of grandfathering.

The second setting differs from the first in that, in the first setting, the capture of the resource is itself societally productive, while in the second setting the generation of the pollutant is not (and never was) valuable. However, the pollutant is merely a necessary byproduct to the production of widgets, which has always been and continues to be societally valuable.¹⁶ Thus, while both scenarios rely upon grandfathering to allocate permits, the grandfathering schemes seek to reward different *ex ante* behavior. In the first setting, the government presumably seeks to reward successful resource harvesters; thus, one would expect the allocations to be substantially proportional to prior harvest rates. In the second setting, by contrast, the goal is to reward successful widget production, but also widget production that generated comparatively less pollutant; one would thus expect the grandfathering scheme to offer permits roughly proportional to prior widget production, with the distribution moderated by an adjustment to favor “ecologically

¹⁶ See Nash, *supra* note 2, at 357 (“Market-based regulations tend . . . to frame their function so as to partition the act of pollution from the underlying activity out of which the pollution emission originates.”); Lee Anne Fennell, *Property and Half-Torts*, 116 YALE L.J. 1400, 1407-16 (2007) (distinguishing between harm, and useful activities that may result in harm as a byproduct).

responsible” widget producers and/or to disfavor ecologically irresponsible producers.¹⁷

These two examples present paradigmatic settings in which grandfathered distributions of permits might arise. Not all grandfathering regimes constitute retrospective allocations, however. To make that determination, one must consider whether societal actors know with certainty while the behavior is unrestricted that engaging in the behavior will entitle them to grandfathered rights. If so, then the regime does not allocate retrospectively. If not, then it does.

Prominent recent examples of retrospective allocations are found in the area of environmental regulation.¹⁸ As an example that corresponds to the first paradigmatic setting, consider the allocation of individual fishing quotas (“IFQs”). IFQ systems are a means of limiting take of fish so as to preserve fish stock. Traditionally, fisheries were operated as an open access system,¹⁹ under which fishermen removed a fish from the commons and claimed a private property right by virtue of being the first to catch that fish, i.e., under a traditional “race to capture” rule.²⁰ True to economic predictions, the open access system and the race to capture led to a tragedy of the commons and its accompanying symptoms: overfishing, depletion of fish stock, and inefficiently large expenditures of resources to catch fish.²¹ Beginning the late 1980s, the United States began to experiment with IFQs.²² Today, they are implemented under the Magnuson Fishery Conservation and Management Act (“Magnuson Act”).²³ The Magnuson

¹⁷ This makes sense from a property theory perspective, insofar as widget production has Lockean value, while pollution production qua pollution production does not. See *infra* note 29 (explaining Leigh Raymond’s application of this notion to the setting of allocation of air pollutant emission allowances).

¹⁸ The fact that retrospective allocation is emerging in these areas is not surprising. See *infra* text accompanying note 86-87.

¹⁹ Alison Reiser, *Property Rights and Ecosystem Management in U.S. Fisheries: Contracting for the Commons*, 24 *ECOLOGY L.Q.* 813, 820 (1997).

²⁰ See, e.g., Dallas DeLuca, Note, *One for Me and One for You: An Analysis of the Initial Allocation of Fishing Quotas*, 13 *N.Y.U. ENVTL. L.J.* 723, 734 (2005)

²¹ See *infra* text accompanying note 85; 16 U.S.C. § 1801(a)(2) (“Certain stocks of fish have declined to the point where their survival is threatened, and other stocks of fish have been so substantially reduced in number that they could become similarly threatened as a consequence of (A) increased fishing pressure, (B) the inadequacy of fishery resource conservation and management practices and controls, or (C) direct and indirect habitat losses which have resulted in a diminished capacity to support existing fishing levels.”); LEIGH RAYMOND, *PRIVATE RIGHTS IN PUBLIC RESOURCES: EQUITY AND PROPERTY ALLOCATION IN MARKET-BASED ENVIRONMENTAL POLICY* 15 & n.2 (2003).

²² See Reiser, *supra* note 19, at 820-21.

²³ 16 U.S.C. §§ 1801-1883.

Act vests regional fishery management councils and the Secretary of Commerce with authority to promulgate IFQ programs, if they so choose.²⁴ The fisheries councils have generally implemented IFQ programs that distribute fishing quotas based upon prior fishing history.²⁵ For example, one fishery council has allocated fishing quotas to owners and lessees of vessels based upon legal fish landings in years before the regulation was put in place. In particular, only owners and lessees of—but not workers on—vessels that made legal landings of halibut or sablefish during 1988, 1989, or 1990 are eligible; each such owner or lessee receives a quota share based on the vessel’s highest total legal landings of halibut and sablefish during 1984 to 1990.²⁶ Every year, the regional director allocates individual fishing quotas by multiplying the person’s quota share by the annual allowable catch.²⁷ The regulation became effective in the mid-1990s, thus rewarding behavior well prior to the enactment (and indeed even the design) of the provision. In short, owners and lessees of vessels that happened to make legal landings during one three-year period (1988-1990)—but not those that made legal landings for 20 years prior thereto or in the years following—received quota shares. In other words, they

²⁴ The Magnuson Act asserts the federal government’s right to fishery management within the exclusive economic zone, *id.* § 1811(a), and to a limited extent outside the exclusive economic zone as well, *see id.* § 1811(b). The Magnuson Act defines “exclusive economic zone” to mean “the zone established by Proclamation Numbered 5030, dated March 10, 1983,” with the proviso that, “[f]or purposes of applying this chapter, the inner boundary of that zone is a line coterminous with the seaward boundary of each of the coastal States,” *id.* § 1802(11).

After asserting this broad federal fishery management authority, the Magnuson Act proceeds then largely to devolve that authority on eight regional “Fishery Management Councils.” *See id.* § 1852. The councils and the Secretary of Commerce may develop fisheries management plans. *See id.* § 1853 (setting forth the required and discretionary contents of fishery management plans); *id.* § 1851 (setting forth national standards for fishery conservation and management, with which “[a]ny fishery management plan . . . , and any regulation promulgated to implement any such plan, . . . shall be consistent”); *id.* § 1854(a) (providing for review by the Secretary of Commerce of all fishery management plans promulgated by regional fishery management councils). In particular, the management councils and the Secretary are granted the discretion to include in a fishery management plan “a limited access system for the fishery.” *Id.* § 1853(b)(6).

At one point the Magnuson Act imposed a moratorium on new IFQ systems, but that moratorium expired in 2002. *See* Katrina Miriam Wyman, *From Fur to Fish: Reconsidering the Evolution of Private Property*, 80 N.Y.U. L. REV. 117, 185-89 (2005).

²⁵ Tradable fishing quotas schemes in other nations have also used historic data as the basis for allocating fishing rights. For explication of the allocation methods used in various fisheries, see COMM. TO REVIEW INDIVIDUAL FISHING QUOTAS, NAT’L RES. COUNCIL, *SHARING THE FISH: TOWARD A NATIONAL POLICY ON INDIVIDUAL FISHING QUOTAS* (1999); DeLuca, Note, *supra* note 20, at 742-56.

²⁶ 50 C.F.R. § 676.20(b).

²⁷ *Id.* § 676.20(f)(1).

received property interests in excess of the legal landings of fish that they knew at the time they were receiving.

As an example that corresponds to the second paradigmatic setting, consider the allocation of air pollution emissions allowances. Domestically, under the national sulfur dioxide permit trading system authorized by the Clean Air Act Amendments of 1990, the underlying logic of the initial grandfathering is to give each existing electricity-generating source a number of allowances equal to the product (in tons) of (i) the source's baseline fuel consumption—which was taken to be the average consumption during 1985 through 1987—and (ii) the lesser of 1.2 pounds of sulfur dioxide per million BTUs and its actual 1985 emissions rate (in pounds of sulfur dioxide per million BTUs).²⁸ In essence, sources received permits in rough proportion to the amount of fuel that they consumed (and, at the same time, pollution that they generated) in years before the program became effective.²⁹

Consider as well the allocation of emissions allowances at the international level. Under the Kyoto Protocol—which was negotiated in 1997³⁰ and entered into force in 2005³¹—developed countries are called upon to reduce their greenhouse gas emissions to a percentage of their 1990 emission levels.³²

²⁸ Nash & Revesz, *supra* note 13, at 585.

²⁹ The sulfur dioxide emissions allowance allocations were determined based upon two factors—fuel consumption and emissions rate—with historical data used only for the former. Leigh Raymond has argued that this makes sense, insofar as only the first factor relates to the beneficial activity in which societal actors were engaged. See RAYMOND, *supra* note 21, at 78-79 (noting that the Bush Administration's proposal for the allocation of sulfur dioxide emission allowances blended two factors—historical fuel consumption and constant emissions rate—and that the use of historical data for the first factor, as opposed to the second, makes sense insofar as “[b]y itself, the consumption of fuel to generate electricity is close to th[e] Lockean ideal: it represents work by utilities benefiting the larger community by providing a vital commodity”; in contrast, “[t]he emissions rate . . . is obviously much less Lockean”). Thus, it makes sense to see societal actors as having engaged in a societally valuable race to capture to the extent of their fuel consumption but not their emissions rates.

³⁰ Eileen Claussen, *Carping at Kyoto*, 34 GEO. WASH. INT'L L. REV. 247, 248 (2002) (book review of DAVID G. VICTOR, *THE COLLAPSE OF THE KYOTO PROTOCOL AND THE STRUGGLE TO SLOW GLOBAL WARMING* (2001)).

³¹ Erik Bluemal, *Unraveling the Global Warming Regime Complex: Competitive Entropy in the Regulation of the Global Public Good*, 155 U. PA. L. REV. 1981, 1993 (2007).

³² See Jonathan Remy Nash, *Too Much Market? Conflict between Tradable Pollution Allowances and the “Polluter Pays” Principle*, 24 HARV. ENVTL. L. REV. 465, 508 & n.175 (2000).

The basic definition and examples shed substantial light on the concept of retrospective allocations. But some of the contours remain hazy. Consider first what it means to be “certain” or “uncertain” about legal regulation. One could be truly ignorant—and, therefore, uncertain—of future congressional (or regulatory) action that later will make behavior during the current years important for subsequent allocations. When it is truly unanticipated, retrospective allocation rewards those who previously depleted the resource, and in proportion to the extent of that depletion, even though they acted without knowing that any such retrospective allocation would take place. One could also expect some congressional (or regulatory) action but be uncertain as to exactly what time period—and, more generally, exactly what criteria—will be considered under a future allocation scheme.³³ Under this variant, the actor receives an allocation for having previously capturing the resource without knowing exactly what rights would be awarded or how they would be distributed.

Consider second the question of timing: At exactly what time must the actor face legal uncertainty? An allocation is retrospective provided that, at the time that the actor’s behavior will be relevant to determining allocations, the actor is not certain that that will in fact be the case. Thus, for example, in the setting of the fishing quotas allocation, the relevant years—1984 to 1990—predated even the announcement that an allocation scheme would be created.³⁴

³³ I consider situations in which one is uncertain to subsume in this regard situations in which one faces a more calculable “risk” as to exactly which criteria will control. See Henry E. Smith, *Property and Property Rules*, 79 N.Y.U. L. REV. 1719, 1724 (2004) (“[R]isk is variability in outcomes that can be captured by a probability distribution, but uncertainty cannot be quantified in this way.”). As I discuss below, the more that risk prevails over uncertainty, the more likely it is that societal actors—or at least those with ample resources—may be able to hedge against that risk. Thus, for example, if a societal actors is certain that some, but not sure as to exactly which, of the next ten years will prove to be of relevance for allocation purposes, the actor can minimize risk by engaging in the requisite behavior during all ten years.

³⁴ I concede that the interplay of “uncertainty” and “timing” may create some hazy boundaries. For example, there is theoretically always uncertainty as to what form legislation will take once enacted, and indeed whether it will be enacted at all. Still, at times, those uncertainties may be at particularly low ebb. For example, Kyle Logue has suggested that new tax laws should be applied prospectively, not from the date of enactment, but from the date that they are originally proposed in Congress. See Kyle Logue, *Tax Transitions, Opportunistic Retroactivity, and the Benefits of Government Precommitment*, 94 MICH. L. REV. 1129, 1180 (1996).

III. BENEFITS AND COSTS OF RETROSPECTIVE ALLOCATIONS

Having conveyed an understanding of the notion of retrospective allocations, I turn now to an initial discussion of their costs or benefits. To see these, I compare retrospective allocation of depletion rights with two competing options. One is the introduction of a system of depletion rights with initial allocations which, as under retrospective allocation, is based upon the behavior of societal actors to that point but that, unlike a system of retrospective allocation, is announced such that societal actors are aware of the pending allocation when they engage in the relevant behavior. The other is the introduction of a system of depletion rights with no transition relief; the permits are to be auctioned off, say annually, by the government.

As I compare across these three possibilities, I consider three areas of relative benefit and cost: (i) incentive effects, (ii) windfall allocations and fairness, (iii) administrative ease and costs, and (iv) efficiency gains and losses.

a. Incentive Effects

Consider first reliance upon the typical rule of first possession to allocate resource depletion rights. As a general matter, first possession will, for a resource that is exhaustible and scarce, often give rise to a race to capture the resource. And races to capture have been assailed for giving rise to undesirable incentives, including overinvestment in effort and technology to win the races, and overconsumption and depletion of the property at issue.³⁵ Because races to capture award property to those who win the races, “race to capture” schemes give rise to incentives to engage in the relevant races now rather than later, and in large scale rather than small scale—even if it would be more efficient, absent the race, to delay entry in the race or to race to capture smaller amounts of property. Each prospective “racer” faces the possibility that, if she does not herself participate in the race (or participates but to a lesser extent), then others will win the race and garner most or all of the available property. The “race to capture” model thus creates the incentive to invest inefficiently large amounts of money, time, and effort in winning races to capture. Similarly, the race creates an incentive to capture property now and in large amounts—even if it would be more efficient to delay capturing the property and to capture it in smaller amounts. Thus, the race creates the incentive to overconsume property resources. And, to the extent that the

³⁵ See Lueck, *supra* note 10, at 396.

resource at issue is either exhaustible or consumed to a level at which it is nonrenewable, allocation of property via a “race to capture” rule may result in inefficient depletion of the resource.³⁶

This fundamental problem with the race to capture can be put succinctly thus: To the extent that the law is transparent in awarding property based upon winning the relevant race—that is, based upon fulfilling certain requirements or meeting certain goals—eligible societal actors are given the incentive to modify their behavior to try to fulfill those requirements and meet those goals. Assuming that the race is designed to further societally desirable objectives, these behavioral modifications are presumably desirable, *to a point*. The problem arises, however, that too many actors will engage in too many—or too substantial—modifications. In other words, the incentives created by the race exceed those reasonably and efficiently demanded by society. Indeed, it may often be the case that the deleterious effects of the traditional race outweigh the benefits that the race offers.

Put another way, society (through legislatures or courts) designs “first possession” schemes to award property to those who engage in societally desirable behavior; they seek both to reward after-the-fact behavior that society considers valuable and worthy, and also perhaps to create an *ex ante* incentive to engage in such behavior.³⁷ In order properly to award property under a race to capture, then, it is necessary for society somehow to *measure* who engages in that behavior, and to what extent. However, the foreknowledge that society will seek to measure behavior and then award property on that basis creates an incentive for societal

³⁶ To some degree, the fact that race to capture regimes may award windfalls—that is, that they may allocate property to undeserving actors over deserving ones, *see infra* Part III.b—may offset some the problems of overinvestment: The factual uncertainty inherent in any race to capture should serve to some degree to temper racers’ investments in trying to win the race. For example, the fact that Post knows that Pierson may be awarded the fox despite his substantial efforts (or that the fox he catches may be far less valuable than the foxes caught by others) should reduce the amount of investment that he (Post) is willing to put into winning the race.

At the same time, however, the same factual uncertainty may lead to *greater* investment, especially as actors continue to engage in the race multiple times and the resource becomes more valuable and scarcer. Provided that greater investments make (or are perceived to make) winning the race sufficiently more likely, then actors will invest more in trying to win the race: If Post knows that his investments will yield foxes (and more valuable foxes) enough of the time such that the cost of his investments will be covered, then the investments will make economic sense to him.

³⁷ *Cf.* RAYMOND, *supra* note 21, at 53 (describing “intrinsic” property allocation methods, which are based on historical performance, arise out of Lockean norms and, as such, “recognize[] prior uses that are *tangible* and *beneficial*”).

actors to adjust their behavior in advance.³⁸ And, while some degree of adjustment indeed may be desirable, it is quite possible that a suboptimally high amount of adjustment will be undertaken.³⁹

Retrospective allocations use the injection of legal uncertainty to achieve two goals. First, legal uncertainty serves to reduce undesirable behavioral alterations. If societal actors are unsure of exactly the basis upon which property will be allocated, then they are limited in the specific steps they can take to modify their behavior to try to obtain the property.⁴⁰

³⁸ In this sense, the problem with the traditional race to capture is similar to the Heisenberg uncertainty principle in quantum physics. The uncertainty principle dictates that an attempt to measure one feature of a subatomic particle necessarily has an effect on the particle, such that some other feature of the particle will be altered. See WERNER HEISENBERG, *PHYSICS AND PHILOSOPHY: THE REVOLUTION IN MODERN SCIENCE* 47-48 (1958). Cf. Laurence H. Tribe, *The Curvature of Constitutional Space: What Lawyers Can Learn from Modern Physics*, 103 HARV. L. REV. 1, 17 (1989) (discussing applications of the uncertainty principle to law); but cf. Jonathan Remy Nash, *Examining the Power of Federal Courts to Certify Questions of State Law*, 88 CORNELL L. REV. 1672, 1675 n.9 (2003) (noting the limits of applying physics, which develops theories based upon observations of the universe, to legal structures, which are developed by society).

³⁹ There are other settings in which anticipation of a government action may generate suboptimally high behavioral adjustments. Kyle Logue describes the phenomenon of “under-the-wire” investment activity,” where taxpayers respond to the “enormous incentive (once the transition is being considered by Congress but before it has been enacted) for taxpayers to increase their level of investment in [an] asset that is going to lose . . . preferential tax treatment.” Logue, *supra* note 34, at 1179. David Dana has noted that “investors have available to them an alternative to reducing their level of investment in response to the risk of future natural preservation regulation: they can accelerate their investment and, in essence, beat the regulatory clock.” David A. Dana, *Natural Preservation and the Race to Develop*, 143 U. PA. L. REV. 655, 681 (1995); see also Dean Lueck & Jeffrey A. Michael, *Preemptive Habitat Destruction under the Endangered Species Act*, 46 J.L. & ECON. 27 (2003). Robert Cooter has discussed how, “when . . . government action is likely to be judged a taking [of property] with full compensation, [a property owner] will give insufficient weight to [the] loss in profits in the event of government action,” and, as a result, “will invest excessively.” Robert F. Cooter, *Unity in Tort, Contract, and Property: The Model of Precaution*, 73 CAL. L. REV. 1, 21 (1985). And Steven Shavell has noted the possibility that “a firm that . . . would only have entered [a] harmful activity in period 2 might . . . choose to enter in period 1 in order to be able to obtain grandfathered status and operate later in period 2 at lower cost.” Steven Shavell, *On Optimal Legal Change, Past Behavior, and Grandfathering* 15 (working paper). Cf. Ehud Guttel, *The (Hidden) Risk of Opportunistic Precautions*, 93 VA. L. REV. 1389, 1395-1406 (2007) (arguing that legal certainty as to the necessity for a tortfeasor to compensate a victim provided that the victim make some precautionary investment creates an incentive for inefficiently high investments in precaution).

⁴⁰ The effect of legal uncertainty in this context is to be contrasted with the notion, advanced by the precautionary principle, that steps are to be taken to avoid catastrophic effects the likelihood of which is uncertain. See generally Jonathan Remy Nash, *Standing and the Precautionary Principle*, 108 COLUM. L. REV. (forthcoming 2008).

At the same time, the fact that a retrospective allocation is used to distribute grandfathered rights means that the desirable behavior that the race to capture is meant to encourage in the first place still will be undertaken. Put another way, since the ultimate legal criteria for distributing the grandfathered rights are based on actors' performances in prior runs of a typical race to capture, one can rely on the fact that participants engaged in the race to capture to exert effort to capture the property there at issue. In the end, desirable behavioral modifications, but not suboptimally large behavioral modifications, should result.

Indeed, this reasoning explicitly underlies the structure of some retrospective allocation regimes. For example, in an environmental impact statement governing the allocation of fishing quotas set out above, the fishery council explained: “[E]xtending [the qualifying period] beyond [1990] would have provided an incentive both for additional fishermen to enter the fishery and for previous entrants to adopt extreme fishing methods in order to increase their landings and, therefore, the [quota shares] they would receive if an IFQ program [were] implemented.”⁴¹ And, subsequently called upon to consider a legal challenge to the allocation method, the Ninth Circuit found it “persuasive” that, “if participation in the fishery while the rule was under consideration had been considered, then people would have fished and invested in boats in order to obtain quota shares, even though that would have exacerbated overcapacity and made no economic sense independent[] of the regulatory benefit”⁴² Added the court: “Had the Secretary [of Commerce] extended the 1990 cutoff, the incentive to pour money and time into the fishery in order to get a bigger quota share, for those who could afford a long term speculation, would have been enormous.”⁴³

For these reasons, retrospective allocations seem to have an advantage, in terms at least of incentive effects, over allocations based on a race to capture. But will this advantage persist over time? Consider the possibility that, as the implementation of retrospective allocations becomes more commonplace, societal actors will anticipate that implementation and

⁴¹ *Alliance against IFQs v. Brown*, 84 F.3d 343, 346 (9th Cir. 1996) (quoting a 1992 environmental impact statement).

⁴² *Id.* at 346.

The legal ground for this aspect of the challenge was that consideration of prior years violated the statutory directive that the council and the Secretary of Commerce “take into account . . . present participation in the fishery.” 16 U.S.C. § 1853(b)(6)(A). The court sustained the fishery’s allocation method in the face of this challenge. *See* 84 F.3d at 346-48.

⁴³ *Alliance against IFQs*, 84 F.3d at 348.

thus try to adjust their behavior to maximize their take despite the legal uncertainty inherent in such allocations.⁴⁴ The first time a retrospective allocation is implemented, societal actors will likely be caught completely off guard. The same may be true the second and third times. Eventually, however, it is reasonable to expect at least sophisticated societal actors to anticipate such schemes. Indeed, in the analogous setting of incentives for landowners to develop land before government restrictions on regulation take effect, David Dana has identified two reasons to expect accelerated development that seem applicable to the setting of natural resources depletion: “First, the potential scope of preservation regulation is now so broad that the owners of virtually any undeveloped land in the United States know or should know that they are subject to some risk of future developmental controls,”⁴⁵ and, “[s]econd, although the potential scope of ecological preservation is now vast, its actual progress has been gradual. With respect to any particular ecological resource, the lag time between the date of the first serious proposal for preservation regulation and the actual implementation of such regulation is often many years.”⁴⁶ If that happens, however, how can retrospective allocation retain its efficacy, i.e., remain uncertain?

The question is made more complicated because we ordinarily *want* societal actors to anticipate legal change. Law and economics theorists argue that it is efficient for societal actors to anticipate, and adjust in advance to, changes of all sorts.⁴⁷ Legal change, they explain, should be treated no differently.⁴⁸ And, at least for sophisticated actors, it is not

⁴⁴ Cf. Dana, *supra* note 39, at 681 (“[T]he potential scope of preservation regulation is now so broad that the owners of virtually any undeveloped land in the United States know or should know that they are subject to some risk of future developmental controls.”).

⁴⁵ *Id.* at 681.

⁴⁶ *Id.* at 683.

Dana offers two other reasons to expect landowners to anticipate and to have the opportunity to engage in accelerated development before government regulation impedes that option: “Third, the losses imposed by uncompensated natural preservation regulation sometimes are very large in absolute terms and in terms of the overall value of the affected investment,” *id.* at 684, and “[f]ourth, and perhaps most important, the strong norm of non-retroactivity in the regime of natural preservation regulation means there is a relatively easy means of protecting oneself against the risk of a future uncompensated regulation restricting development—develop immediately and thoroughly,” *id.*

⁴⁷ See Nash & Revesz, *supra* note 8, at 1726 (explaining that, under the dominant law and economics approach to legal transitions, transition rules that lessen the effect of legal regime shifts are undesirable insofar as they inefficiently discourage societal actors from anticipating legal change).

⁴⁸ See Louis Kaplow, *An Economic Analysis of Legal Transitions*, 99 HARV. L. REV. 509, 584-87 (1986); cf. Ann Woolhandler, *Public Rights, Private Rights, and Statutory Retroactivity*, 94 GEO. L.J. 1015, 1055 (2006) (noting the law and economics literature

unreasonable to expect them to anticipate legal changes.⁴⁹ The notion of completely random changes to the governing legal regime would render such anticipation impossible.

The answer to the question is constrained randomness. In a setting of a truly unanticipated retrospective allocation, the participants do not know even that an allocation is afoot. After a time, it is reasonable, and probably desirable, for societal actors to expect that a retrospective allocation scheme is afoot. The key is to keep random the precise criteria by which the allocation will be conducted—i.e., the criteria according to which success will be measured and property will be allocated.

Of course, it will not do to make the criteria completely random: A retrospective allocation scheme should use criteria that ultimately are designed to reward, and thus create an incentive to engage in, desirable behavior.⁵⁰ Rather, the criteria need to be random enough so as to discourage sufficiently strategic behavioral modification.⁵¹ For example, in the case of fisheries, while one would expect that new IFQ systems

that views “prospective and retroactive regulatory changes as essentially equal” in that “[b]oth may upset expectations, creating economic winners and losers,” and that concludes that “[p]arties should be encouraged to anticipate legal change, whether nominally retroactive or prospective”).

⁴⁹ See Kyle D. Logue, *Legal Transitions, Rational Expectations, and Legal Process*, 13 J. CONTEMP. LEGAL ISSUES 211, 214 (2003) (arguing that it is reasonable to expect sophisticated actors to anticipate legal changes).

⁵⁰ See *supra* text accompanying note 40.

⁵¹ A simple analogy is to the notion that teachers seeking to examine students over a range of material may select certain topics on which to test but, in order to ensure that students cannot cut corners on what they study, will not tell students exactly what topics will appear on the examination.

Another analogy arises in the context of attempts by accrediting agencies to measure performance without thereby affecting how participants perform. For example, in Britain, a 2005 announcement of how productivity of university faculties would be measured in 2008 explains:

The [Research Assessment Exercise] exists to measure the quality of research in [U.K. higher education institutions]. It should carry out that function without distorting the activity that it measures, and it should not encourage or discourage any particular type of activity or behaviour other than providing a general stimulus to the improvement of research quality overall.

HIGHER EDUCATION FUNDING COUNCILS FOR ENGLAND ET AL., RESEARCH ASSESSMENT EXERCISE 2008: GUIDANCE TO PANELS 5-6 (2005) (available at <http://www.rae.ac.uk/pubs/2005/01/rae0105.pdf>). See also *id.* at 2 (making clear that the Research Assessment Exercise seeks to “[d]evelop[] an assessment process which operates neutrally without distorting the activity that it measures and neither encourages nor discourages any particular type of activity or behaviour other than providing a stimulus to the improvement of research quality overall”).

might use similar criteria—including, in particular, reliance upon historical fishing data—to allocate IFQs, one also would expect (eventually) new IFQ systems to vary the precise historical data upon which the criteria would draw.⁵² Thus, one system might rely upon the three prior years, while another system might rely upon the five-year period that ended the year before.⁵³

In the end, retrospective allocation seems preferable to allocation based on a race to capture on the axis of incentive effects. Consider now that both of these allocative mechanisms afford societal actors some measure of relief from legal regime change, however. Insofar as it understands it as desirable to create incentives for societal actors to anticipate legal transitions (much as any other transitions), the traditional law and economics approach as a general matter characterizes legal transition relief as undesirable.⁵⁴ Grandfathering, in particular, may give rise to perverse incentives, such as barriers against entry⁵⁵ or exit,⁵⁶ and incentives to perpetuate and extend grandfathering rules.⁵⁷ On this understanding, because neither a race to capture nor retrospective allocation encourages societal actors to anticipate and adjust to coming legal changes, both options are worse than simply providing no transition relief at all.

⁵² The uncertainty with which societal actors initially might view retrospective allocations thus might evolve toward risk. This might allow wealthier actors to hedge. *See supra* note 33.

⁵³ The question of exactly what criteria might appropriate be varied might be a difficult one. In my view, for example, it would not make sense to vary the *classes* of societal actors—such as owners, lessees, and workers in the fishing quota context—who will be entitled to allocations.

Another difficult question is, so to speak, how broadly to vary the criteria. Choosing three, as opposed to seven, out of a ten-year period will greatly increase the costs actors face to hedge, and thus decrease the incentive to do so. On the other hand, choosing seven out of ten years will afford actors more leeway and seems more inclusive and fairer. *Cf. New York v. EPA*, 413 F.3d 3, 37 (D.C. Cir. 2005) (upholding EPA’s decision to revise new source review Clean Air Act regulations to allow firms, instead of relying upon the two years immediately preceding a physical change to a plant to determine a baseline pollution level, to choose any two of the preceding ten years, on the ground that “a ten-year period was necessary ‘to ensure that the normal business cycle would be captured generally for any industry’” (quoting 67 Fed. Reg. 80,186, 80,216 (Dec. 31, 2002)), *cert. denied*, 127 S. Ct. 2127 (2007).

⁵⁴ *See supra* text accompanying notes 47-49.

⁵⁵ *See Nash & Revesz, supra* note 8, at 1729.

⁵⁶ *See Nash, supra* note 32, at 506 (describing barrier against exit); *see also Nash & Revesz, supra* note 8, at 1708-12 (discussing the “old plant effect”).

⁵⁷ *See Nash & Revesz, supra* note 8, at 1729.

Some commentators, however, have argued that not offering transition relief may give rise to perverse incentive effects at least in some settings. Kyle Logue has observed that Congress has at times attempted to alter taxpayers' behavior using the tax code,⁵⁸ for such so-called "incentive subsidies" to be effective, taxpayers must be able to rely on the government's commitment to retain those incentives.⁵⁹ Lawrence Blume and Daniel Rubinfeld have argued that the risk of uncompensated losses that result from regulatory action may produce underinvestment in socially productive activity.⁶⁰ Richard Revesz and I have argued that the large expenses generally associated with compliance with environmental regulation might discourage actors from voluntarily complying with impending regulation absent some assurance that a subsequent tightening of the regulatory standard would likely render that investment quickly obsolete.⁶¹ Finally, Steven Shavell has also argued that, in order to retain incentives to encourage actors to comply with existing legal regimes that requires behavior or investment of a durable nature, grandfathering of past behavior may be socially advantageous.⁶²

In the end, then, the relative desirability, from the perspective of incentive effects, of a system with no transition relief will depend upon the particular circumstances. In the setting of resource access allocation, it may often be the case that (i) capital investments are large, and (ii) there is a desire to evidence government commitment so as to avoid suboptimally

⁵⁸ See Logue, *supra* note 34, at 1132, 1138-39.

⁵⁹ See *id.* at 1144. Logue draws a parallel to government's obligation to fulfill its contractual obligations and, on the basis of this analogy, argues that the government should grant transition relief when changing incentive provisions. See *id.* at 1143-52. But cf. Eric A. Posner, *Courts Should Not Enforce Government Contracts* (draft paper).

⁶⁰ See Lawrence Blume & Daniel L. Rubinfeld, *Compensation for Takings: An Economic Analysis*, 72 CAL. L. REV. 569, 582-99 (1984) (explaining that the absence of private insurance against government action necessitates compensation for government takings in order to minimize suboptimally low investments); cf. *Palazzolo v. Rhode Island*, 533 U.S. 606 (2001) (holding that the mere fact that someone takes title to property after the government has imposed a regulation on land use does not bar a takings claim).

While Blume and Rubinfeld argue that private insurance against government regulation is generally not an option, there may be settings in which the private sector can provide the assurance necessary to encourage societal actors to take steps even before a government program is initiated: Consider the efforts being undertaken by private entities to create guidelines to certify voluntary carbon gas reduction credits even before the advent of—or in the absence of—a formal trading system. See Amena H. Saiyid, *Consortium Issues Carbon Standard to Certify Credits Earned in Voluntary Carbon Markets*, DAILY ENVT. REP. (BNA), Nov. 20, 2007, at A-11.

⁶¹ See Nash & Revesz, *supra* note 8, at 1727-28; see also Shavell, *supra* note 39, at 26-27.

⁶² See Shavell, *supra* note 39, at 2, 26-27.

low investments in resource extraction (not just in the instant case, but in general). If that is true, then at least some time-limited form of grandfathering might be preferable to no transition relief at all.

b. Windfall Allocations and Fairness

I turn next to the measure of windfall allocations and fairness. Eric Kades has defined windfalls as “economic gains independent of work, planning, or other productive activities that society wishes to reward.”⁶³ Fairness can be seen to speak to the desirability of allocating similar rewards to those who are similarly situated. Allocation systems that distribute windfall allocations and unfair allocations can be seen to impose costs on the system by potentially raising questions about the legitimacy of the system, and also by jeopardizing the incentive to invest in being part of the system (and, even beyond the current system, similar systems of allocation) with the expectation of receiving some reward.

Whether a race to capture allocation system will award windfall and unfair allocations turns to a great degree on the structure and design of the system. A simple race to capture may easily award windfalls: Consider, for example, the award of the fox in *Pierson v. Post* not to the individual who invested time and effort in chasing the fox for the better part of the day, but rather to the “saucy intruder.”⁶⁴ At the same time, a more complex race to capture that defines “first possession” in a way that takes greater account of investment and effort would face fewer problems on that score. The law can try to minimize windfalls by defining the requirements for winning the race to capture with an eye to identifying truly deserving parties. And, in fact, in some sense one of the main reasons to adopt a race to capture is to do just that. At some point, however, some windfalls are allowed to slip through⁶⁵ in order to avoid large administrative expenses and complications.⁶⁶

⁶³ Eric Kades, *Windfalls*, 108 YALE L.J. 1489, 1491 (1999).

⁶⁴ 3 Cai. 175, 182 (N.Y. Sup. Ct. 1805).

⁶⁵ As a general matter, the law allows those who accede to windfalls to keep them. *See, e.g.*, *City of Everett v. Estate of Sumstad*, 631 P.2d 366 (Wash. 1981). Indeed, not only does the law allow one who accedes to a windfall to keep the profit, but the current tax law does not even tax the profit at that time. *See, e.g.*, BORIS I. BITTKER, MARTIN J. MCMAHON, JR. & LAWRENCE A. ZELENAK, *FEDERAL INCOME TAXATION OF INDIVIDUALS* ¶ 3.05[2], at [check] (2d ed. 2005); Thomas L. Evans, *The Taxation of Nonshareholder Contributions to Capital: An Economic Analysis*, 45 VAND. L. REV. 1457, 1524 n.235 (1992) (“If a person, through either skill or good luck, manages to purchase property from another at a price below its fair market value, the purchaser is not required to immediately include the bargain element in income.”). *Cf.* BITTKER ET AL., *supra*, ¶ 3.08[3], at [check] (noting that the tax treatment of an ordinary bargain is “quite different” from the tax

One can argue that a retrospective allocation system is more congenial to taking complex considerations into account in meting out property: Whatever criteria are ultimately used to determine the winners of the race can be chosen with deliberation. Indeed, they can be designed so as not to reward isolated or random acts—or, for that matter, a strategy that is not well calculated to succeed in achieving the underlying goal (that is, to win the underlying race to capture, on the results of which the grandfathering allocations will be based)—and thus minimize windfalls.⁶⁷ For example, the fishing quota allocations described above are unlikely to award windfall allocations insofar as (i) only owners and lessees of vessels who made at least one legal landing during a (theretofore unannounced) three-year period receive any allocation, and further (ii) any allocations are based upon legal landings achieved during a six-year period.⁶⁸

Despite this potential benefit over a race to capture, retrospective allocation also has a downside. Consider first problems of fairness. The fact that criteria are determined after the fact may mean that some actors receive allocations while others do not, even if the two groups are similarly worthy, simply because one group happens to fit the strictures of the

treatment for a “bargain purchase’ in the sense in which this term is used by tax practitioners; viz., to denote a purchase of property for less than fair market value if the difference reflects an extraneous objective, such as the seller’s desire to confer an economic advantage on the buyer,” where income is imputed for tax purposes).

The tax treatment of fortuitous finds, while less clear than that of windfalls, in practice seems also to give favorable tax treatment to those who benefit by happenstance. See BITTKER ET AL., *supra*, ¶ 3.05[2], at [check] (noting that, “[a]lthough the treasure trove regulation clearly contemplates the inclusion in gross income of noncash treasure troves, there is virtually no judicial discussion of the taxability of such treasure troves,” which “suggests the IRS is generally willing—despite the treasure trove regulation—to treat noncash finds as zero basis assets, with taxation deferred until the found property is sold”).

⁶⁶ See Dhammika Dharmapala & Rohan Pitchford, *An Economic Analysis of “Riding to Hounds”*: *Pierson v. Post Revisited*, 18 J.L. ECON. & ORG. 39, 54 (2002) (discussing the effect of enforcement costs on the economically optimal rule in *Pierson v. Post*); *but see id.* at 55-58 (arguing that the rule advanced in the *Pierson* dissent may sometimes be economically preferable even where enforcement costs loom).

The decision (as expressed either in actual law or in practice) not to impose a tax on windfall gains can also be seen to be grounded in administrative ease. See Evans, *supra* note 64, at 1524 n.235 (“Generally, taxing persons on economic advantages they obtain in bargain purchases would be inadministrable; difficulties of valuation, liquidity, and enforcement would make this an impossible task.”).

⁶⁷ I address below the question of whether awarding grandfathering relief itself bestows a windfall on existing actors in favor of new entrants. See *infra* text accompanying notes 74-75.

⁶⁸ See *supra* text accompanying notes 26-27.

criteria while the other does not.⁶⁹ For example, in the fisheries context, owners and lessees of vessels that, for one reason or another, fished in the relevant fishery from 1984-1987 and again from 1991 on, but fished in other fisheries during the 1988-1990 period, would receive no quota shares, while an owner of a vessel that only fished in the relevant fishery during 1989 would.⁷⁰

It should not be lost sight of that the typical race to capture itself features problems of fairness. It is entirely possible for two similarly situated individuals to receive entirely different allocations under a rule of first possession. At least, moreover, outcomes that may seem unfair under a retrospective allocation will presumably be the result of some deliberation, and ultimately a decision that is made for the betterment of the greater good.⁷¹

⁶⁹ See RAYMOND, *supra* note 21, at 53 (“Baselines can be determined on the basis of a single year or by averaging several years of prior use. Determining the precise method of setting the baseline is itself a thorny policy problem, given the possible variants and their potentially significant distributive impacts.”).

An amusing popular culture example of this can be found in the comic romp film, *It's a Mad, Mad, Mad, Mad World* (1963). There, a number of automobile drivers and passengers pull to the side of the road to find a dying man who describes where to find a large buried treasure. Once the man has died, a suggestion is made for all present to join forces, and then find and share the treasure. An argument over apportionment ensues, with suggestions made to base apportionment on a per capita basis, on a per vehicle basis (without regard to the number of passengers in each vehicle), and on the basis of contribution to actually having helped the dying man. In the end, discussions break down and the various individuals race to try to reach, and claim, the treasure first.

⁷⁰ See *Alliance against IFQs*, 84 F.3d at 352 (“This is a troubling case. Perfectly innocent people going about their legitimate business in a productive industry have suffered greater economic harm because the federal regulatory scheme changed.”). The Ninth Circuit in *Alliance against IFQs v. Brown* considered, and rejected, a challenge to the allocation method by a group of vessel owners and lessees who received no quota shares for that reason. See *supra* text accompanying notes 41-43.

The court also considered a challenge by workers that the allocation of quota shares to owners and lessees but not workers was not, as the governing statute required, “fair and equitable.” See 84 F.3d at 348 (quoting 16 U.S.C. § 1851(a)(4)(A)). Though it described the argument as “sensible,” *id.*, the court proceeded to reject the argument, on two grounds. First, the statute did not make the “fair and equitable” requirement the sole criteria with which the council had to comply. See *id.* at 348-49. Second, the council’s logic that owners and lessees have put capital at risk and thus deserve quota shares was sound: “The Secretary thought that the problem of overfishing resulted more from investment in boats than occupational choices of fishermen, so the administrative remedy should be measured by ownership and leasing of boats.” *Id.* at 349.

⁷¹ Cf. *Alliance against IFQs*, 84 F.3d at 350 (“The Secretary is allowed . . . to sacrifice the interests of some groups of fishermen, for the benefit as the Secretary sees it of the fishery as a whole.”).

Indeed, one should take care not to allow the legal uncertainty that inheres under retrospective allocation to obscure the fact that, overall, retrospective allocation schemes should still be designed to reward ex post valuable behavior and thus to encourage en ante more of that behavior. Indeed, even under a retrospective allocation regime with randomly varying criteria, the criteria are not chosen absolutely randomly, but rather are chosen from a list of criteria, all of which will give rise to desirable incentives among societal actors.⁷² Thus, the fairness concerns to which retrospective allocation might give rise are not as broad or extreme as those to which a completely random distribution of property might give rise.⁷³

Now, consider windfalls and fairness under a system with no transition relief. An absence of transition relief means that societal actors who previously engaged in the relevant behavior will have no advantage over newcomers. On one understanding, this fact renders systems with no transition relief inherently fairer and removes the windfall that previous actors receive under other approaches.

Another understanding, however, views as justified at least some disparate treatment offered to previous actors, and thus does not view transition relief either as unfair or as bestowing a windfall. One such argument is grounded in economic fairness: Revesz and I have argued that it might be unfair not to protect (at least to the point of reasonable return) an actor's investment that at the time it was made was seen to comply with existing legal standards.⁷⁴

A distinct argument suggests that a desire to protect lifestyles and community cohesion, and to validate norms, may justify disparate treatment.⁷⁵ Perhaps the only problem is resource depletion, not the community's hold on resource access. Thus, but for the depletion of the resource, the community would be left alone, so why disturb the community's access if resource constraints can be imposed without so disturbing?

⁷² See *supra* text accompanying notes 50-53.

⁷³ See GUIDO CALABRESI & PHILIP BOBBITT, TRAGIC CHOICES 41-44 (1978) (discussing fairness problems that inhere in lotteries and other completely random distributions).

⁷⁴ See Nash & Revesz, *supra* note 8, at 1730-31.

⁷⁵ See *supra* note 37.

As with incentive effects, then, the preferability of systems with no transition relief will turn upon the particular circumstances and one's view as to whether disparate treatment is somehow justified.

c. Administrative Ease and Costs

For the government to allocate resource depletion rights on the basis of a traditional race to capture, it must gather data on the results of the race during the relevant time period. The introduction of retrospective allocation requires gathering similar data, albeit perhaps from earlier years, at a potentially greater cost. Moreover, the desire to gather more data than is necessary so as to avoid "tipping the government's hand" as to exactly which data will prove to be relevant may impose marginally greater costs than a simple race to capture system.

A system that avoided transition relief by allocating depletion rights based upon an auction would impose the costs of conducting the auction. Such costs might be minimized by outsourcing the auction.⁷⁶

d. Efficiency Gains and Losses

To the extent that transaction costs are low and depletion rights are tradable, the choice of initial allocation method will not impose large efficiency costs: Trading will ultimately lead the permits to those who value them most.⁷⁷

If either of those assumptions does not hold, then the choice of initial allocation method may well matter. Since trading cannot be relied on to allocate the permits efficiently, the farther the initial allocation is from the efficient allocation, the greater the efficiency cost imposed.

An auction will by definition allocate the permits efficiently. By contrast, there is no reason to think that either a race to capture or retrospective allocation will achieve that goal, although retrospective allocation may perhaps do better to the extent that it takes into account historical, and larger amounts, of data. On this measure, then, a system with no transition relief is preferable.

⁷⁶ See Nash, *supra* note 32, at 491 (noting that EPA has arranged for the Chicago Board of Trade to handle the limited annual auction of sulfur dioxide emission allowances).

⁷⁷ See *supra* 1 and accompanying text.

e. Summary

Table 1 summarizes the likely benefits and costs across each dimension for each allocatory option. Retrospective allocation seems preferable to reliance upon a typical race to capture. The choice between retrospective allocation and having no transition relief is closer. In particular, the issue of whether it is seen as appropriate or inappropriate to treat preexisting actors differently from newcomers looms large, especially where it is likely that the initial allocation will not impose large efficiency costs. The choice may vary, then, from setting to setting; perhaps, for example, retrospective allocation has greater normative attraction in the setting of fishing quotas that will affect a community, than in the setting of air pollutant emission allowances that will affect a broad industry.

Table 1: Comparison of costs imposed by various systems of allocation.

| | <u>Race to Capture</u> | <u>Retrospective Allocation</u> | <u>No Transition Relief</u> |
|---|--|--|---|
| Incentive Effects | Suboptimally high behavioral adjustments; no incentive to anticipate new legal regime. | Appropriate behavioral adjustments; no incentive to anticipate new legal regime. | Incentive to anticipate new legal regime, although perhaps also disincentive to make large investments in reliance upon current regime. |
| Windfall Allocation and Fairness | Considerable potential for windfalls; considerable potential for unfairness. | Minimal potential for windfalls (other than favorable treatment of existing actors over newcomers); moderate potential for unfairness. | No windfalls; potential for unfairness for those who relied on earlier regime. |
| Administrative Ease and Costs | Cost of measuring and tabulating who “won the race”. | Cost of measuring and tabulating who engaged in the relevant behavior in prior years. | Costs of auction. |
| Efficiency Gains and Losses | Potentially high costs if there is no trading or transaction costs are high. | Potentially sizeable costs if there is no trading or transaction costs are high. | No costs. |

IV. THE EVOLUTION OF RETROSPECTIVE ALLOCATIONS

In this Part, I consider the evolution of retrospective allocations. In doing so, I confront two questions. First, why has retrospective allocation tended (so far, at least) to evolve from the race to capture in the setting of the allocation of publicly-held natural resources? And, second, how does the retrospective allocation retain its edge—i.e., legal uncertainty—once its implementation becomes foreseeable?

To answer the first question, consider those settings in which open resource access and a rule of first possession is likely to function well, as opposed to those where it is most likely to succumb to overinvestment and suboptimally high depletion of the property in question. Open access and first possession should work well where the resource is plenteous or where there are comparatively few actors who desire an interest in the resource.⁷⁸ Such a regime should also function fairly well in other instances where the number of participants is limited. For example, it should suffice where costs to participate are quite heterogeneous among societal actors; there, only those who faced comparatively lower participation costs will partake.⁷⁹ The same should be true where, even if many actors face similar costs, those costs are high and relatively few of them have the financial resources to meet the initial investment effectively necessary to participate.

In contrast, scenarios in which open access combined with a rule of first possession are more likely to break down are those in which a larger number of actors may participate, and where the resource is not so plentiful so as to be able to meet the demands of all participants. Also, as the costs to capture the resource faced by actors become more homogeneous, the collapse of first possession to a degenerative race to capture becomes more

⁷⁸ Lueck, *supra* note 10, at 405 (“The rule of capture may not produce severe dissipation when there are but a few users or when there are “plenteous” goods. Here, open access may persist optimally because few people are exploiting the resource, or because marginal use costs are high, or both.” (footnote omitted)); Johnston, *supra* note 11, at 859 (“In the natural resource area, whether th[e] problem [of rent dissipation and excessive entry] arises depends very much upon how abundant resources are relative to the number of people racing to acquire rights.”); *id.* at 860 (“When each user is small relative to the total number of users, they all ignore the marginal effect of their increased harvest on other users and increase harvest levels until average product equals average cost.”).

⁷⁹ See Lueck, *supra* note 10, at 400 (“[A]s the heterogeneity of claims . . . increases the level of dissipation will decrease. In the extreme case where just one person has costs less than the net present value of the asset’s flow, the first-best outcome is achieved. In this case, only one person finds it worthwhile to enter the race, so there is no dissipation.” (footnote omitted)).

likely.⁸⁰ But the situation may be even worse where, over time, costs cycle from homogeneous to heterogeneous and back again. Consider a situation where some actors gain a temporary cost advantage (and thus for that period perform better in the race and capture more of the resource), but after a time other actors are able to invest money and achieve similar cost advantages. This dynamic means that societal actors will be encouraged to sink more and more money into pursuing the resource in question, only to have the return on those investments dissipate over time and to face renewed incentives to invest even greater sums.⁸¹

A rule of first possession gives rise to especially pernicious incentives when it is used to allocate property previously held in commons by stakeholders, or held by the government subject to open-access capture. The so-called “tragedy of the commons” arises because prospective participants in the race to capture have a strong incentive to engage in the race even if it would be in everyone’s self-interest to abstain. Any person with access to the commons can claim individual ownership over property previously held in commons simply by capturing it.⁸² A rule of first possession as applied to resources held in commons or under open access often also has another feature that precipitates the collapse to a race for the resource: the likelihood that, over time, cost advantages can be eliminated by further investments.

⁸⁰ See *id.* at 399.

⁸¹ See *id.* at 401 (“If individual cost advantages can be eliminated through investment in the techniques of acquiring property rights, then all methods of initially establishing property rights will completely dissipate the value of the resource.” (footnote omitted)).

⁸² The captor loses an undivided ownership interest in the captured property, but so too does everyone else who has a stake in the commons. In essence, the captor’s gain of sole, individual ownership of the captured property far outweighs the loss of the undivided interest. Further, all other persons with a stake in the commons contribute to the captor’s gain by in effect losing their undivided interests in the captured property. In this way, the captor imposes externalities on the other commons stakeholders.

The tragic scenario is likely to arise even where it is in no one’s interest to engage in capture, because of the difficulty in reaching and enforcing an agreement not to race. For example, it may well be that the property held in commons will become more valuable (even after factoring in time discounting) if allowed to remain in commons. Still, each individual has a strong incentive to defect, capture property, reap gain for herself, and impose externalities on everyone else. (The tragedy of the commons can thus be seen as a multiplayer prisoners’ dilemma.) In essence, even if the property would be worth more to me (and everyone else) later, because the property may not be around at the later time, I have an incentive to capture as much of the property as possible now. Because each individual has a strong incentive to defect—and because it takes only one erstwhile defector to create large incentives for others to defect—economic theory predicts that, absent a robust enforceable agreement (or equivalently strong community norms), all stakeholders will engage in the race to capture.

Applications of a rule of first possession to natural resource stocks are scenarios in which it is less likely to lead to windfall allocations, and more likely to be escalation by the participants toward a race for the resource. Under these scenarios, circumstances dictate that a not insubstantial investment be made in order to compete for the resource. In those instances, the only participants in the race will be those who are ready, willing, and able to make a relatively sizable initial investment. That reduces the possibility of windfall allocations, insofar as, in some sense at least, the up-front investment makes it far more likely that only deserving parties will be allocated property rights.⁸³ Second, however, the up-front investment is likely to increase the likelihood of escalation, insofar as further escalations in investments are encouraged. As a result, pressure on the resource continues to increase. These scenarios are also those which evolve from a simple rule of first possession to a grandfathering regime. And, in light of the reasonable expectation that societal actors may anticipate (or at least over time come to anticipate) such regulation,⁸⁴ one might expect the retrospective allocation regimes to take some hold.

Fisheries provide an example of such a setting. Initially, the resource stock is adequate to satisfy all race participants. Over time, however, as the stock starts to dwindle, the efforts needed to capture fish—and the costs of doing so—become greater. Eventually, some actors invest larger sums so as to obtain advantages (such as larger vessels and better fishing equipment). Cost heterogeneity allows for those participants to capture more fish. But this advantage is short-lived, since other participants can match them, and even outdo them. Cost homogeneity may return, but at a higher cost level, and with the resource stock at a lower level and facing even greater drain. Windfall property allocations will be low at this point, but the number of race participants committed (by virtue of sunk costs) to continued escalation will be large.⁸⁵

⁸³ See Kades, *supra* note 62, at 1537 (“When locating minerals was largely serendipitous, as opposed to the result of the significant investments utilized in modern times, letting mineral wealth essentially fall into the lap of the purchaser of well-situated farm acreage did amount to a windfall.”).

⁸⁴ See *supra* text accompanying notes 44-46.

⁸⁵ See, e.g., Tierney, *supra* note 6 (discussing the continuing deterioration of a New England fishery due to “effort creep,” and contrasting it with the wealth of fishermen in an Australian fishery that adopted fishing quotas).

Jason Johnston argues that the problems of rent dissipation, excessive entry and resource depletion are not the result simply of the race to capture structure. He argues that the depletion in resource level should, over time, discourage prospective entrants from joining the race and existing race participants from further investments. See Johnston, *supra* note 11, at 860-98. The real problem, Johnston continues, is government policies

It thus is not surprising to see the method used to allocate more and precious natural resources evolve away from a simple rule of first possession.⁸⁶ It is logical, moreover, for such settings to evolve toward a more nuanced race to capture grandfathered rights to capture the underlying resource. It makes sense to limit access to the resource. By limiting access to actors based upon historical performance with respect to capturing the resource, it is possible both to limit access to the resource to those who deserve such access, but also to allocate the property to societal actors without encouraging further behavioral modifications or putting the resource stock at unnecessary greater risk. And these goals can be achieved by superimposing a race to capture grandfathered access rights onto existing races to capture resources, but—importantly—without divulging the first race to those participating in the second until after it is over.

There is a second setting that I identified above as a natural home for retrospective allocation: where a resource is depleted as a byproduct of a societally beneficial activity, and the resource is again subject to open access and a rule of first possession. Open access is maintained in such a setting because there is no way (even if there were an incentive) to stop others from depleting the resource. Indeed, at low levels of resource depletion—which, presumably has been the case during the growth of the societally beneficial activity—there is no incentive to restrict access; use of the resource seems nonrivalrous. Escalation in resource depletion results from increased demand for the product of the societally beneficial activity (as compared to demand for the resource itself in the first setting). Here, as in the first setting, it becomes important to restrict access to and depletion of the resource. Again, it is somewhat logical to reward those who have previously been engaging in the societally beneficial activity—although perhaps not directly as in the first setting for prior success at resource capture, but rather, as I have discussed above, for efficient and responsible

that encourage heavy investments and sunk costs into racing for particular resources. *Id.* at 857 (“[T]he recommended policies—such as those that encourage harvesters to avoid sunk costs in harvesting particular species and systems, and that develop economic alternatives to harvest—have been almost the opposite of those that governments have actually adopted. . . . [T]he major reason for the collapse and imperilment of species and ecosystems is not the bioeconomic dynamic set up by the open access rule of capture, but rather government policies that have systematically subsidized natural resource use and thereby discouraged exit from extractive (harvesting) industries.”).

⁸⁶ See Lueck, *supra* note 10, at 395 (“I conclude that actual legal rules of first possession anticipate the potential for dissipation and develop to limit it.”).

success at engaging in the beneficial activity while drawing down the resource efficiently and responsibly.⁸⁷

Once retrospective allocation begins to gain hold, a second question arises: To the extent that retrospective allocation relies upon legal uncertainty for its effectiveness, how can it remain effective once societal actors can anticipate its implementation?⁸⁸ Put another way, the issue is one of continued adjustment and strategic responses. The problem with the race to capture is that societal actors come to understand the terms of the race and adjust their behavior accordingly and strategically (and perhaps inefficiently) to win that race. The evolution to retrospective allocation is a strategic response to that problem. But then the very circumstances that made the evolution to retrospective allocation necessary suggest that actors also will respond strategically to retrospective allocation. In context, this means that actors will try to anticipate implementation of retrospective allocation schemes and engage in behavior designed to capture as many grandfathered rights as possible.

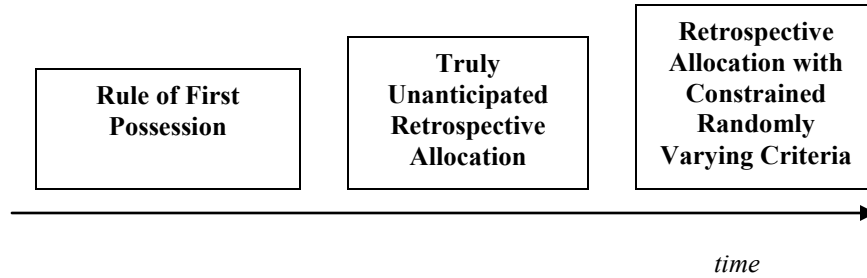
How will retrospective allocation evolve to meet this strategic response? I addressed this portion of the evolutionary question in the previous Part. The answer is the concept of varying constrained randomness.⁸⁹

It thus seems that, as summarized in Figure 1, the logical responses to excessive behavioral modification on the part of societal actors operating under a rule of first possession is to have the setting evolve, first to a truly unanticipated retrospective allocation scheme, and then to a retrospective allocation scheme with constrained randomly varying criteria. In the next Part, I turn to the question of explain why this logical evolution is in fact likely to take place, at least in some circumstances.

⁸⁷ See *supra* note 17 and accompanying text.

⁸⁸ In addition, another question arises: If the race to capture will evolve, why should we expect it to evolve toward retrospective allocation? I address this question in the next Part.

⁸⁹ See *supra* text accompanying notes 50-53.

FIGURE 1: Evolution of Retrospective Allocation

V. LEGISLATIVE AND REGULATORY ACTION, PUBLIC CHOICE, AND THE EVOLUTION OF RETROSPECTIVE ALLOCATION

In this Part, I address the interplay between the evolution of retrospective allocation and public choice theory. In particular, I tackle a conundrum that the prior Part indirectly raised. In the prior Part, I characterized retrospective allocation as a strategic response to strategic behavior undertaken in response to the race to capture. Left unasked—and unanswered—was exactly why the strategic move from the race to capture to retrospective allocation would take place. The implicit assumption was that the actor who would decide how (if at all) to respond to societal actors' strategic responses to the race to capture—presumably, the government—would act in the best interests of society and exogenously to the interest of the societal actors who would be adversely affected by government action.

But that assumption is unrealistic. Consider now the motivations of the government in deciding whether, and how, to respond to strategic responses to the race to capture. Assuming that the government wishes to confront strategic behavior, it could move from a race to capture to retrospective allocation. But, if it really wants to confront the strategic behavior, then there is an even better response available to it: simply restrict the right to pursue the resource to the extent that actors have permits to do so, and then auction those permits off on a regular basis. In the case of fisheries, for example, auctioning off the IFQs is preferable to grandfathering them.

Despite its attractiveness from the standpoint of economic efficiency, the auction option resides in virtual desuetude.⁹⁰ This is because, as public choice theory predicts, those who already hold a valuable right from which they are extracting rents will do all they can to retain that right.⁹¹ Specifically, they will lobby the government not to pursue that strategy. And public choice theory predicts that they will be successful.⁹²

But if the auction option is infeasible, why should the government be interested in moving, and willing to move, in the direction of the retrospective allocation? Put another way, assuming that government's responses to strategic reactions to the race to capture are not exogenous to the interests of those who participate in the race, how does public choice theory square with the evolution toward retrospective allocation?

At the outset, one can observe that, while auctions of resource rights remain rare, the examples in Part II indicate that retrospective allocations are becoming more common. Thus, the question that remains is the theoretical one: how to explain the evolution toward retrospective allocations but not toward auctions.

A broad answer to the question is not difficult to find. Public choice theory anticipates that, in moving away from first possession and the race to capture—that is, away from an open-access regime in which everyone has the opportunity to pursue property interests—to a system in which the right to obtain additional property will be restricted, the government will have to compensate in some way powerful interests who otherwise would suffer under the restrictions.⁹³ Thus, the use of grandfathered rights, as opposed to auctioning off rights, is not

⁹⁰ See, e.g., Thomas W. Merrill, *Explaining Market Mechanisms*, 2000 U. ILL. L. REV. 275, 284; Nathaniel O. Keohane, Richard L. Revesz & Robert N. Stavins, *The Choice of Regulatory Instruments in Environmental Policy*, 22 HARV. ENVTL. L. REV. 313, 316 (1998). This may be changing, however. See, e.g., Dean Scott, *California Urges Auction of Allowances Under Federal Cap-and-Trade Legislation*, DAILY ENVT. REP. (BNA), Oct. 9, 2007, at A-5.

⁹¹ Cf. RAYMOND, *supra* note 21, at 18-19 (“Any limitations on use [of previously open-access resources] . . . create winners and losers: people who get more access versus those who get less, or people who pay more for their use versus people who pay less.”).

⁹² See Keohane et al., *supra* note 90, at 347-53.

⁹³ See Saul Levmore, *Changes, Anticipations, and Reparations*, 99 COLUM. L. REV. 1657, 1665-66 (1999) (describing transition relief as a way to compensate politically powerful interests who otherwise would stand to lose under, and therefore would oppose, a new legal regime).

surprising.⁹⁴ The grandfathered rights are a pure form of pork.⁹⁵ As an added bonus to politicians, the grandfathered rights also protect existing interests against new entrants.⁹⁶ Finally, the use of auctions makes explicit something—the balance of benefits against the costs of environmental regulation—that the public generally does not want to think is driving environmental regulation.⁹⁷

Even if the attractiveness of the truly unanticipated retrospective allocation regime from a public choice perspective is thus made clear, a narrower question still remains: Why, under a public choice conception, would government move from a race to capture to a retrospective allocation regime (whether pure or with constrained randomly varying criteria)? Why, in other words, would the government not just stick with awarding grandfathered rights predictably, in accordance with anticipated measures of historical performance?

The answer to this narrower question is more nuanced. First, public choice theory itself may provide some explanation for a shift toward retrospective allocation regimes. A truly unanticipated retrospective allocation scheme seems to allow government to confer benefits directly upon an existing, organized group of societal actors. But retrospective allocation (with, as necessary, constrained randomly varying criteria) may allow for virtually the same result while simultaneously allowing government to enjoy transparency while claiming some sense of fairness. Simply listing recipients of property rights in legislation raises questions about the choice of recipients; but identifying objective criteria by which rights are to be allocated creates an aura of objective fairness.⁹⁸ The public

⁹⁴ See *id.* at 348, 353.

⁹⁵ See Merrill, *supra* note 90, at 287-88 (Firms that engage in polluting activities “will exert strong political pressure in opposition to any proposal for Pigouvian taxes or auctioned permits but is likely to have a much more equivocal response to grandfathered permits.”); Lisa Heinzerling, *supra* note 4, at 328-33 (explaining how the Congress that enacted the 1990 Clean Air Act Amendments distributed sulfur dioxide emission allowances as political favors).

⁹⁶ See Keohane et al., *supra* note 90, at 350-51.

⁹⁷ See *id.* at 359 (noting that, insofar as explicit cost-benefit analyses are not preferred by voters, “[g]randfathered permits fare better on the visibility criterion than auctioned permits or taxes, because no money is exchanged at the time of the initial allocation.”); see generally Nash, *supra* note 2.

⁹⁸ Compare Clean Air Act § 404(e)(3) tbl. A, 42 U.S.C. § 7651c(e)(3) tbl. A (table listing assignment of sulfur dioxide emissions allowances under the initial phase of the national sulfur dioxide trading regime) with *id.* § 405, 42 U.S.C. § 7651d (setting forth criteria as basis for allocation of allowances under second, major phase of the national sulfur dioxide trading program).

values procedural justice on the part of the government,⁹⁹ and retrospective allocation enhances the perception of procedural fairness. Retrospective allocation thus may successfully garner enough legislative support from different sides where other, more extreme (and perhaps more desirable) proposals might not.¹⁰⁰ It may satisfy legislators—and interest groups—as preferable to the status quo (that is, the race to capture) and also preferable to more extreme regulatory action such as the introduction of auctions.

A more optimistic public choice story¹⁰¹ would focus on settings where particularly close-knit communities are going to be affected by the government regulation. Because they are close-knit, the communities are able to effectively organize—perhaps with the help of political entrepreneurs¹⁰²—and thus wield sufficient political power to retain access rights within the community. At the same time, strong community norms militate against purely buying off powerful interests, and instead favor the more moderate result of a fairer scheme for distributing grandfathered right.

It may be, however, that public choice theory may not hold full sway where race participants—i.e., those who previously have had access to, and freedom to capture, the resource—have a compelling, and politically acceptable, claim to continued resource access.¹⁰³ For example,

⁹⁹ See, e.g., Tom R. Tyler, *Governing amid Diversity: The Effect of Fair Decisionmaking Procedures on the Legitimacy of Government*, 28 LAW & SOC'Y REV. 809 (2004) (explaining that people consider procedural justice in evaluating matters of national policy and legislative action).

¹⁰⁰ Cf. Brett H. McDonnell, *Two Cheers for Corporate Law Federalism*, 30 J. CORP. L. 99, 137-38 (2004) (discussing how, because of the multiplicity of actors involved in federal lawmaking, the status quo of letting Delaware state law effectively set the standard may persist because some federal actors may check the attempt by other federal actors to change the field at the federal level); David S. Law & Lawrence B. Solum, *Judicial Selection, Appointments Gridlock, and the Nuclear Option*, 15 J. CONTEMP. L. ISSUES 51 (2006) (explaining how changes to procedures governing the judicial appointments process must satisfy various factions in the Senate as well as the Executive to some extent). (I am grateful to Amitai Aviram for suggesting these analogies.)

¹⁰¹ Compare, in this regard, Saul Levmore's dichotomy between pessimistic stories for the evolution of property rights that are grounded public choice, and optimistic stories that are grounded in efficiency. See Saul Levmore, *Property's Uneasy Path and Expanding Future*, 70 U. CHI. L. REV. 181, 182-84 (2003).

¹⁰² See Jonathan Remy Nash, *Public Choice versus Efficiency: The Case of Property Rights in Road Traffic Management*, 49 B.C. L. REV. (forthcoming 2008) (describing how political entrepreneurs can harness public opinion).

¹⁰³ See RAYMOND, *supra* note 21, at 23-24 ("Even political scientists working on public choice theory, with its models of political behavior based on self-interest, have noted the likely influence of norms on legislative outcomes."); *id* at 29-33 (equity plays a larger role in property allocation schemes than most commentators acknowledge).

where members of a fishing community have devoted time and effort to fishing—and, indeed, have made fishing a veritable (and venerable) way of life—the government may recognize that fully to terminate those fishing rights and allow them to be auctioned off to others would be unfair, and perhaps also untenable.¹⁰⁴

Indeed, this may be a setting in which, in effect, a public-private partnership may succeed at governing the commons. Elinor Ostrom has argued that there are settings in which private groups may successfully manage a commons without government intervention.¹⁰⁵ Settings in which the government intervenes yet cedes considerable regulatory power to local group actors—such as is the case with Congress leaving considerable power with regional fisheries councils—may be hybrid settings in which limited government intervention combines with and empowers local interests to achieve effective governance.

It is possible that one story or another may hold greater sway in some settings than in others. For example, the community-centered nature of fishing in many areas suggests that either the optimistic public choice story or a norm-based story explains the emergence of retrospective allocation. On the other hand, the pessimistic public choice power may have more explanatory force in the setting of the national sulfur dioxide emission allowance program. Indeed, that conclusion accords with Lisa Heinzerling's explication of how Congress arrived at the allocation system under that program.¹⁰⁶ The Kyoto Protocol's allocation system may be a mix of stories. The allocation of greenhouse gas emission quotas in proportion to the scope of industrialized nations' prior polluting histories seems to reflect the public choice power of larger, industrialized nations. At the same time, the allocation of quotas to developing nations—such as former members of the Soviet Union and Soviet bloc—in excess of those nations' capacity to pollute¹⁰⁷ may in fact reflect a tacit way to effect desirable foreign aid—insofar as the nations may be predicted to sell the excess emissions quotas—that could not otherwise be accomplished.¹⁰⁸

¹⁰⁴ See *supra* note 37 and the text accompanying note 75.

¹⁰⁵ See generally Elinor Ostrom, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 90 (1990); see also Elinor Ostrom, *Reformulating the Commons*, 6 SWISS POLI. SCI. REV. 29, 40-43 (2000).

¹⁰⁶ See *supra* note 4.

¹⁰⁷ See Nash, *supra* note 32, at 522-23 (describing the allocation of Kyoto Protocol emissions quotas to former Soviet bloc countries and the associated issue of selling so-called "hot air" emissions quotas).

¹⁰⁸ See *id.* at 534.

VI. RAMIFICATIONS

In this Part, I consider some ramifications of my analysis of retrospective allocation.

I begin with some insights that may inform the law and economics literature on transition relief. The general lesson that the literature offers is that transition relief is undesirable because it will inefficiently discourage societal actors from anticipating legal change. The case of retrospective allocation suggests, however, that, to the extent that it has nonetheless been determined that transition relief will be offered, it is *not* desirable for societal actors to anticipate it too clearly, lest they too greatly alter their pre-regime behavior. Legal uncertainty, in other words, is not always a bad thing in connection with regime changes.¹⁰⁹

The literature on legal transitions also often accepts grandfathering, but as a necessary political evil. Retrospective allocation, however, may be a form of allocating grandfathered rights that has justifications grounded in both concern over incentive effects, and concern over fairness. That does not mean, however, that reliance upon retrospective allocation will always be desirable. Rather, it seems that the normative decision should be made by examining the underlying reasons for adoption of retrospective allocation. For example, the use of retrospective allocation seems to have been somewhat normatively justified for fisheries, yet less so for sulfur dioxide allowances.¹¹⁰

¹⁰⁹ There are other settings in which legal uncertainty may discourage behavioral modifications that would otherwise be suboptimally high. Consider the question of why the doctrine of adverse possession does not overly encourage aggressive trespassers to attempt to obtain lands of others? One answer may be the unpredictable likelihood of success, even across numerous attempts at adverse possession. First, true owners' efforts to reclaim the land may be difficult to predict. Second, application of the doctrine of adverse possession is sufficiently unclear that one can rarely expect with any degree of certainty to be able to succeed in such a claim. See Lee Anne Fennell, *Efficient Trespass: The Case for "Bad Faith" Adverse Possession*, 100 NW. U. L. REV. 1037, 1062 (2006) (noting that the outcome of adverse possession claims are rarely certain, in particular because "the successful adverse claimant [must] establish a variety of elements, each of which is open textured and subject to judicial interpretation").

Consider as well the thesis that incomplete compensation for takings claims leaves property owners sufficiently uncertain so as to cap suboptimally high investment. See Thomas W. Merrill, *Incomplete Compensation for Takings*, 11 N.Y.U. ENVTL. L.J. 110, 132-33 (2002).

¹¹⁰ See *supra* text accompanying note 106.

I turn now to the possible application of the lessons of retrospective allocation—and especially the role of uncertainty and the importance of past behavior—to other areas of law. Consider first immigration law, where Congress occasionally chooses to grant amnesty to individuals who have immigrated to the country illegally. The decision of whether to grant asylum to individuals who have entered the United States illegally has in the past turned (and may again in the future turn) on the behavior of applicants in years before the requirements for asylum are formulated.¹¹¹ The decision to grant asylum to some illegal immigrants has historically been tied (and, it appears if it were to happen again, would again be tied) to a new policy going forward of further restricting illegal immigrant entry and/or greater enforcing existing laws against illegal immigrants. As such, the notion of announcing the requirements for asylum for illegal immigrants *in advance*—e.g., enter the country today and, if you spend the next five years here safely without being deported, you will be eligible for naturalization—would be contrary to the government’s overarching intent. Indeed, it might encourage more people to attempt to enter the country illegally so as to try to satisfy the requirements. One can see elements analogous to retrospective property allocations in such amnesty programs, in that immigrants who enter the country illegally do not learn whether, or the precise terms under which amnesty will be granted, until after the relevant time period has lapsed. In effect, the decision to base asylum on past behavior mirrors the decision to allocate grandfathered rights based on past behavior under retrospective allocation.

Next, consider the question of how to evaluate educational institutions. One answer is simply to announce a set of objective criteria and then to proceed to apply them. This is the approach used by U.S. News & World Report in its rankings of U.S. law schools.¹¹² The rankings have been criticized for both generating undesirable incentive effects,¹¹³

¹¹¹ See, e.g., Immigration Reform and Control Act of 1986, PUB. L. NO. 99-603, 100 Stat. 3359 (establishing a one-year amnesty period during which illegal immigrants who had lived and worked in the United States continuously since 1982 could apply for lawfully admitted temporary residence status).

¹¹² “While some adjustments have been made in the methods used to construct the [U.S. News & World Report] rankings, their basic structure has remained the same.” Michael Sauder, *Strength in Numbers? The Advantages of Multiple Rankings*, 81 IND. L.J. 205, 208 (2006).

¹¹³ Jeffrey Stake explains:

If important ranking systems include a given factor, schools will shift resources to improving that factor and away from factors that count for less in the rankings. This raises the issue of whether those changes in resource allocation improve legal education. If there was no systematic bias against an included factor before the rankings shifted incentives, the rankings push spending on that factor beyond the

and also, by encouraging all law schools to focus all their resources on particular factors, reducing the variety among law schools.¹¹⁴ Both these outcomes can be seen to turn on the degree to which the criteria upon which U.S. News & World Report will rely are seen to be certain.

The lesson of retrospective allocation suggests another alternative: One might randomly vary the criteria according to which the relevant educational institutions will be assessed. The injection of uncertainty should discourage suboptimally high behavioral modification, as also not encourage excessive uniformity.¹¹⁵ And, indeed, some national academic evaluation procedures have taken such an approach.¹¹⁶

VII. CONCLUSION

In this Paper, I have argued that retrospective allocation solves some of the problems to which the traditional race to capture gives rise. Retrospective allocation is a device that preserves the ability to award societal actors for valuable contributions to society without creating undesirable incentives to deplete resources. Retrospective allocation may generate costs of its own, but the benefits will often outweigh those costs.

Insofar as it ameliorates some of the problems associated with the traditional race, and its benefits outweighs any costs, retrospective

optimum. The rankings cause schools to devote too many resources to some goals and too little to others. According to Dean Kramer of Stanford Law School, “You distort your policies to preserve your ranking, that's the problem.”

Jeffrey Evans Stake, *The Interplay between Law School Rankings, Reputations, and Resource Allocation: Ways Rankings Mislead*, 81 IND. L.J. 229, 232 (2006). *See id.* at 232-42 (delineating incentives to which the U.S. News & World Report ranking system gives rise); *see also* Sauder, *supra* note 112, at 211 (“[T]he U.S. News ranking has clearly altered the distribution of resources—resources of time, money, and attention—within law schools.”).

¹¹⁴ Jeffrey Stake elucidates:

One effect of the hegemony of the U.S. News rankings is to create an incentive for schools to calculate and aim for an optimal mix of expenditures. What this means is that U.S. News may unwittingly be homogenizing legal education. With time, schools will learn which spending mix yields the greatest rankings bang and the optimum mix will tend to be the same for most schools. U.S. News will make it increasingly hard to experiment with different ways of producing an extraordinary product.

Stake, *supra* note 113, at 242.

¹¹⁵ Cf. Robert D. Cooter, *Introduction*, 82 CAL. L. REV. 487, 489 (1994) (“Vagueness has value because it encourages diversity of behavior, which contributes to the continual refinement of the law by providing the necessary information.”).

¹¹⁶ *See supra* note 51.

allocation is a natural response to the use of strategic behavior that renders first possession and the accompanying race to capture undesirable. A question arises as to why retrospective allocation will in practice be implemented. Public choice provides one explanation, which may be spun pessimistically or optimistically.

From a pessimistic standpoint, one can argue that retrospective allocation simply accomplishes what traditional grandfathering accomplishes, with a veneer of fairness. The government can use retrospective allocation to distribute property rights to virtually all the societal actors to whom it would like to distribute property rights; it thus achieves the public choice goal of satisfying powerful interests. At the same time, it can achieve the goal under the veil of procedural fairness, thus muting other possible objections to the program.

It may, of course, be the case that a few powerful actors who receive property under a race to capture will lose under retrospective allocation. However, the marginal increase in opposition to the government program that results will be small. Moreover, it will be more than offset by the benefit enjoyed by legislators for having created a program with the appearance of procedural fairness.

A more optimistic rendering of the public choice account would emphasize that procedural fairness really matters. First, it provides limits on government discretion. And, second, it may be likely to encourage (if not in fact to force) government actors to deliberate before they settle upon a final distribution strategy.

It may also be that norms play an important role in some settings to favor retrospective allocation regimes. Because it preserves the ability to award societal actors for beneficial activity, retrospective allocation may be preferable to allocation methods that afford no transition relief (for example, auctions, which award resource rights to the highest bidders).

Finally, some of the lessons here may have application in other areas, such as immigration law and educational assessment.