

At the genesis of property, an initial allocation of entitlements takes place. Existing property scholarship identifies two main rules for assigning original ownership – ‘first possession’ and ‘accession’ – and positions them one against another. This article challenges the conventional binary division and the dominance of either first possession or accession as ‘pure’ allocation principles, arguing instead that the ownership of new resources is often allocated through hybrid mechanisms that combine the two rules. This article offers an analysis of hybrid rules and their utility through a novel and contemporary case study of the ongoing allocation of property in wind energy.

Keywords: property, initial allocation, accession, first possession, wind energy

I Introduction

In the beginning, there was nothing. At the genesis of property – the moment at which a new thing comes into being – an initial allocation of property takes place. Things that were previously unowned come into ownership. This process through which rights are initially assigned is the basis for our property systems. It has been central in shaping our existing property allocations in resources such as land, water, wildlife, and minerals and continues to carry an ongoing importance for contemporary resources such as newly discovered reserves of gas, novel intangible goods, and renewable energy resources.

Existing property scholarship identifies two main rules for assigning entitlements in newly discovered or recognized resources. Many property scholars characterize ‘first possession’ as the predominant rule for allocating property rights in unowned resources.¹ Under this rule,

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1 See e.g. Richard A Epstein, ‘Possession as the Root of Title’ (1979) 13 Ga L Rev 1221 [Epstein, ‘Possession’]; Dean Lueck, ‘The Rule of First Possession and the Design of

ownership is allocated to the first person to establish possession of the resource. In the famous case of *Pierson v Post*, which is often used to illustrate this rule, Pierson won ownership of the fox because he was the first to possess it, by killing it.² More recently, a second rule that competes with first possession has entered the discourse. This rule is ‘accession,’ under which a new resource is awarded to the owner of an existing resource because of the relationship between the new resource and the existing one.³ Paradigmatic examples of accession in action are the rule that a newborn calf is allocated to the owner of the mother cow or that the crops are assigned to the owner of the soil.⁴

First possession and accession are positioned one against another and depicted as having detached and ‘distinct spheres of application.’⁵ This article, however, challenges the primacy of either possession or accession as ‘pure’ and distinct modes of acquisition. Rather, it maintains that the ownership of new resources is often allocated through a hybrid rule that combines first possession and accession. The rules for initial property allocation should be understood as existing along a spectrum: first possession falls at one end of the spectrum and accession at the other, but, in between, there are many hybrid combinations of the two that are often used to allocate ownership in new resources. Furthermore, the hybrid rule often follows a specific pattern: it begins with accession that acts to determine the group of potential claimants – by virtue of owning a pre-existing resource, the existing owners get rights to access the new one. At the second stage, however, first possession comes into play, and a race takes place between the potential claimants to define who among them establishes title or how much of the resource each one can own.

The rules for allocating rights to groundwater are an example of a hybrid. Groundwater, which is an increasingly important source of water, historically was allocated by the common law in many places using the ‘English Rule.’ Under this rule, each landowner was allowed to drill and extract water flowing underneath her land.⁶ This rule is usually understood as an example of first possession because under the rule a landowner gains ownership of only as much groundwater as she

the Law’ (1995) 38 JL & Econ 393 [Lueck]; Lawrence Berger, ‘An Analysis of the Doctrine That First in Time Is First in Right’ (1985) 64 Neb L Rev 349 at 350.

2 3 Cai R 175 (NY Sup Ct 1805) [*Pierson*].

3 Thomas W Merrill, ‘Accession and Original Ownership’ (2009) 1 J Legal Analysis 459 [Merrill, ‘Accession’].

4 Ibid at 464–5.

5 Ibid at 460.

6 Jesse Dukeminier et al, *Property* (New York: Aspen, 2006) at 37–8 [Dukeminier et al]; Peter M Gerhart & Robert D Cheren, ‘Recognizing the Shared Ownership of Subsurface Resource Pools’ (2013) 63 Case W Res L Rev 1041 at 1045 [Gerhart & Cheren].

extracts.⁷ Landowners interested in using the groundwater are therefore in a competitive race to extract the groundwater in the aquifer before their neighbours do so. However, the English Rule should actually be understood as a hybrid rule combining accession and first possession. To gain ownership of groundwater, one first needs to own the land above the aquifer. Thus, ownership of an existing resource – land – is a predicate for owning the groundwater, and accession helps to allocate groundwater. First possession plays a role in allocating groundwater under the English Rule because a landowner gets title only over the water that she is the first to extract, but since only the landowners overlying the groundwater can do so, accession limits who can participate in the competitive race.

In addition to arguing that a hybrid of accession and first possession is often used to allocate resources, this article also underscores its functional advantage. The hybrid pattern mitigates the shortcomings of relying on either first possession or accession alone. First possession is criticized for being a wasteful rule since many individuals must expend resources in the effort to win the prize of ownership, whereas only one (or very few) individuals can actually claim the prize. One way to decrease the wasteful spending is by limiting the number of contestants. Accession does exactly that – it limits the circle of potential claimants, which helps limit the dissipation of rents in the race.

At the same time, accession can be insufficient in fully allocating the entitlement when it does not provide a unique solution to choosing among the potential claimants. For instance, accession can tell us that all landowners are eligible to capture a specific gallon of groundwater, but it cannot determine which one of them establishes title in it because they all have the same type of connection to the land. That second step of materializing the connection to a specific gallon of water is determined by a competition under first possession. This issue could also be framed as an insufficiency in defining the scope of the right. Accession tells us, for example, that a landowner is entitled to use some of the water passing under her land, but it often does not define how much water one can legitimately take. First possession, however, embodies an inherent requirement to possess a portion of the resource in order to gain title, and, therefore, it is more often crafted in terms that address the question ‘how much’ – for example, as much as can be beneficially used or as much as can be captured at a given point in time.

The rules for allocating property rights in new resources are key to a functioning property system and have received considerable attention

⁷ Restatement (Second) of Torts 1979, ch 41, topic 4, introductory note.

from scholars. However, in focusing on first possession and, more recently, on accession as an alternative to it, the scholarship has obscured the existence of hybrid rules combining the two and has not properly characterized the relationship between them. Hybrid rules have many benefits over either first possession or accession alone, and, for these reasons, important resources are allocated using hybrid rules. Understanding the prevalence of hybrids thus contributes to the discourse on the allocation of original ownership. It underscores the existence of varying shades of allocations, rather than opposing modes, shifting from a dichotomized discourse to a more nuanced one.

Recognizing the existence and the advantages of hybrid rules for allocating property in new resources also has significant implications for policy makers. As technology evolves, new resources are created or become economically viable to extract. In our time, for example, inventors are creating new intangible goods that may become the subject of intellectual property rights – unconventional reserves of oil and gas are being retrieved using hydrofracking technology and kinetic energy is being extracted from the wind as the use of renewable energy increases in the face of climate change. All of these newly created or newly exploited resources have to be allocated to owners before they can be sold in the marketplace. Recognizing the potential of hybrid rules, not just first possession or accession, broadens the range of options for policy makers in the legislatures, agencies, and courts to use in deciding how to allocate new or newly valuable resources. Understanding the advantages of hybrid rules also suggests when policy makers should prefer them to the rules of first possession and accession that have been the focus of scholarly attention.

This article highlights the importance of hybrid rules through a novel and contemporary case study of the allocation of property rights in wind energy. In recent years, renewable energy sources such as wind have become an increasing source of electricity. Using original research, I argue that the newly valuable right to extract kinetic energy from the wind – which is used to generate electricity – is currently being allocated through a hybrid of accession and first possession, and I explain the utility of this hybrid rule for wind energy. The case study not only illustrates in a concrete context the application and appeal of hybrid rules but also demonstrates the importance of recognizing such hybrids, given the ongoing growth in wind energy production.

The article proceeds as follows. The second Part analyzes the rules of first possession and accession that are currently the main focus of property scholarship and considers how these rules are contrasted. It argues that a hybrid rule that combines the two is actually prevalent. Examples of hybrids are discussed to illustrate the pattern. The third Part of the

article provides a functional explanation for the existence of hybrid regimes. It also emphasizes the normative implications for such a combined rule. The fourth Part then illustrates the dynamics of a hybrid regime through an original case study of the rules currently being used to allocate property rights to extract wind energy. The fifth Part concludes.

II Breaking the binary distinction: hybrid mechanisms for allocating original ownership

A FIRST POSSESSION AND ACCESSION

Original acquisition is concerned with the initial allocation of property in a thing that was previously unowned.⁸ This typically happens at the moment the thing came into being or came into new value that was worthy of property.⁹ Property scholarship has identified several alternatives for the initial allocation of property.¹⁰ Recent scholarship, however, has focused mostly on two alternatives, presenting them as contrasting approaches. One is the rule of ‘first possession,’ which broadly maintains that the entitlement in a thing is allocated on a competitive basis. The allocation under first possession typically involves some kind of race between claimants for competitive extraction or capture.¹¹ Paradigmatic

8 For the purpose of this analysis, I use the term ‘property’ broadly to include different types of entitlements in ‘things.’ This includes ownership as well as use rights of various kinds. I do so because, as the examples below will illustrate, despite notable differences between these types of entitlements (ownership compared to use rights), the structure of their allocation, at least in some instances, might actually follow a very similar pattern.

9 The question of what is ‘worthy’ of property and which things can be subject to property has been the focus of recent scholarly attention (see e.g. Henry E Smith, ‘Property as the Law of Things’ (2012) 125 Harv L Rev 1691 at 1691; Thomas W Merrill, ‘The Property Strategy’ (2012) 160 U Pa L Rev 2061 at 2063 [Merrill, ‘Property Strategy’]. But cf Christopher Essert, ‘Property in Licences and the Law of Things’ (2014) 59 McGill LJ 559. For a recent insightful review and analysis of the ‘thing’ element in property scholarship, see Katrina M Wyman, ‘The New Essentialism in Property’ [forthcoming] [Wyman, ‘New Essentialism’].

10 First possession and accession are regarded as the most prevalent modes of initial allocation and will therefore be the focus of this article. Although initial allocation can also take place through other mechanisms, including auction or lottery (see e.g. Merrill, ‘Accession,’ supra note 3 at 486–7; David D Haddock, ‘First Possession versus Optimal Timing: Limiting the Dissipation of Economic Value’ (1986) 64 Wash ULQ 775 at 786 [Haddock]). It is possible that hybrids are created among those rules as well.

11 Dean Lueck distinguishes between first possession (the first one to claim title) and the rule of capture (which requires actual capture). Lueck, supra note 1 at 404. For the purpose of this discussion, however, I assume there is sufficient overlap between the two to use them interchangeably.

examples include gold in the American West in the nineteenth century, where the finders were entitled to own the gold they discovered,¹² and prior appropriation in the water regime (at least in its early days), where the first to divert the water was entitled to use it and where junior users' rights were subject to senior right-holders.¹³ The capture of wild animals is also often cited as a classic example in this context, as in the famous case of *Pierson v Post*.¹⁴

First possession is often tied to labour theory and justified in its terms. Capturing or taking possession is considered a form of labour, and the commingling of that labour with the resource establishes an entitlement to it, as desert for that labour.¹⁵ First possession has also been justified as an effective means of communicating possession to others. It acts like a type of statement, providing notice to the world.¹⁶ It is also viewed through the lens of incentives to invest in the discovery of new resources or new information, where ownership serves as the prize that drives investment.¹⁷

There are also many criticisms of first possession. In brief, one set of limitations attributed to first possession relates to the inadequate incentives it sets with regard to the exploitation of resources. The rule has been criticized as being inefficient since it leads to wasteful consumption of resources through competition for the prize of ownership. It also leads to premature exploitation or over-consumption of resources,

¹² See Andrea G McDowell, 'From Commons to Claims: Property Rights in the California Gold Rush' (2002) 14 Yale JL & Human 1 at 3 [McDowell].

¹³ *Irwin v Phillips*, 5 Cal 140 at 147 (Cal 1855); *Coffin v Left Hand Ditch Co*, 6 Colo 443 at 447 (Colo 1882); Mark Kanazawa, *Golden Rules: The Origins of California Water Law in the Gold Rush* (Chicago: University of Chicago Press 2015) at 189–92 (analyzing the adoption of the first possession principles by the courts).

¹⁴ *Pierson*, supra note 2. See also Epstein, 'Possession,' supra note 1 at 1224 (noting that *Pierson* is 'perhaps the leading case on the subject'); Angela Fernandez, 'Fuzzy Rules and Clear Enough Standards: The Uses and Abuses of *Pierson v Post*' (2013) 63 UTLJ 97 at 102–3 (noting that *Pierson v Post* came to be treated as the 'authoritative or canonical text' in 'thinking about possession').

¹⁵ John Locke, *Two Treatises of Government* (1690) at 285–302 [Locke]; Carol M Rose, 'Possession as the Origin of Property' (1985) 52 U Chicago L Rev 73 at 73 [Rose]. But see Eric R Claeys, 'Productive Use in Acquisition, Accession, and Labour Theory' in James Penner & Henry Smith, eds, *Philosophical Foundations of Property Law* (Oxford: Oxford University Press, 2013) [Claeys, 'Productive Use in Acquisition'] (maintaining that 'labor' applies beyond original acquisition through first possession and goes, more broadly, to specifying the boundaries of existing entitlements).

¹⁶ Rose, supra note 15 at 77–9. Communication and desert are sometimes seen as inherently combined, such that 'rewarding the one who communicates a claim . . . reward[s] useful labor; the useful labor is the very act of speaking clearly and distinctly about one's claims to property' (at 82); Claeys, 'Productive Use in Acquisition,' supra note 15 at 24 (highlighting the communicative function of labour).

¹⁷ See Dhammika Dharmapala & Rohan Pitchford, 'An Economic Analysis of "Riding to Hounds": *Pierson v. Post* Revisited' (2002) 18 JL Econ & Org 39.

where the resources could have otherwise been put to more productive uses.¹⁸ Lastly, there are often ambiguities about what amounts to ‘possession’ for the purpose of establishing ownership under first possession, which might further complicate the application of the rule.¹⁹

Nonetheless, first possession is regarded as the most common rule of initial allocation,²⁰ and it has played a central role in forming the existing property allocations.²¹ First possession has been studied extensively and has been applied to a wide range of settings, including the electromagnetic spectrum, emissions rights, fisheries and wildlife, groundwater, hard rock minerals, intellectual property, and oil and gas.²²

Recently, however, Thomas Merrill has challenged the dominance of first possession by introducing the principle of accession into the discourse.²³ Merrill argues that accession is far more prevalent than has previously been noted. The examples of accession, according to Merrill, are ‘so pervasive and general that [the principle of accession] escapes our everyday notice.’²⁴ In fact, Merrill maintains that the principle of accession is the most prevalent form of initial allocation today. He claims that in circumstances where ‘either principle could be used to resolve a dispute over original title . . . accession rather than first possession tends to prevail.’²⁵ Moreover, Merrill predicts that accession will increasingly dominate first possession ‘as property rights become thicker and economic values associated with resources become larger.’²⁶

As opposed to first possession, ownership of a new resource under the principle of accession is assigned based on existing ownership structures.

18 Lueck, *supra* note 1 at 394; Haddock, *supra* note 10 at 776–7.

19 Examples of such complexities in determining ‘possession’ include the question of what constitutes ‘possession’ of the fox in *Pierson* (*supra* note 2) and the discussion of what amounts to ‘possession’ of a whale. See Robert C Ellickson, ‘A Hypothesis of Wealth-Maximizing Norms: Evidence from the Whaling Industry’ (1989) 5 *JL & Econ* 83 [Ellickson, ‘Wealth-Maximizing Norms’]; Thomas W Merrill & Henry E Smith, *Property: Principles and Policies*, 2d ed (Eagan, MN: Foundation Press, 2012) at 82–93 [Merrill & Smith, ‘Property’]; Rose, *supra* note 15 at 78.

20 Lueck, *supra* note 1 at 393–4.

21 As Richard Epstein underscores, in a sense it has become the default rule in many contexts. Epstein, ‘Possession,’ *supra* note 1 at 1241. Henry Smith frames the role of first possession in terms of custom, noting that ‘first possession is an area of the law where custom plays an unusually large role.’ Henry E Smith, ‘The Elements of Possession’ in Yun-Chien Chang, ed, *The Law and Economics of Possession* (Cambridge, UK: Cambridge University Press, 2014) at 84 [Smith, ‘Elements of Possession’].

22 Lueck, *supra* note 1 at 393 (reviewing the studies of first possession in these various contexts).

23 Merrill, ‘Accession,’ *supra* note 3.

24 *Ibid* at 473.

25 *Ibid* at 460.

26 *Ibid*.

This means that as new resources are created or their value changes such that they become subjects of property, the owner of a pre-existing resource that is ‘prominently connected’ to the new one gains title over it.²⁷ An example would be the owner of a mother cow who gains title to a newborn calf²⁸ or an owner of soil who gains ownership of the crops being grown in it.²⁹

The main point of accession is that there is a special nexus between an existing resource and a new one, such that it makes sense to assign ownership of the new resource to the owner of the existing one.³⁰ However, there is some ambiguity with regard to what amounts to, or what establishes, that special nexus that leads us to see a new resource as an accessory to an existing one. Merrill suggests there is a psychological explanation as to why humans tend to see some objects as inherently connected to others.³¹ Yet, even within this explanation, it is hard to draw the line – to define – what exactly amounts to a prominent connection.

To clarify, this discussion refers to the principle of accession as a broader mechanism for allocating original title. The term ‘accession’ is sometimes used to refer to narrower situations or doctrines. For instance, there are several categories in Roman law referred to under the umbrella of accession.³² The term ‘accession’ is further used in the context of

²⁷ Ibid at 463. Merrill makes the same point in recent work too, noting that ‘[t]he concept of accessionary rights . . . means that ownership of a thing entails ownership of emergent resources that have a prominent connection to the thing.’ Merrill, ‘Property Strategy,’ supra note 9 at 2070; and in his joint work with Henry Smith, noting that ‘the principle of accession refers to a family of doctrines, each of which shares a common feature: ownership of some unclaimed or contested resource is assigned to the owner of some *other* resource that has a particularly prominent relationship to the unclaimed or contested resource.’ Merrill & Smith, ‘Property,’ supra note 19 at 161 [emphasis in original].

²⁸ This is also known as the doctrine of increase (ibid at 165–6). See also David Hume, *A Treatise of Human Nature* (1738) at 327: ‘[T]he offspring of our cattle . . . [are] esteem’d our property, even before possession.’

²⁹ Merrill, ‘Accession,’ supra note 3 at 464–5.

³⁰ Ibid at 463. Merrill also views accession more broadly as a basic aspect of property that ‘includes as a central design feature the owner’s routine capture of all increments in value that are prominently connected with the owned asset’ (ibid at 473); see also Merrill, ‘Property Strategy,’ supra note 9 at 2068: ‘[W]hat is often loosely described as the “right to exclude” can be characterized with greater precision as twin rights of residual managerial authority and residual accessionary rights.’

³¹ Merrill draws, in this regard, on the psychological explanation offered by David Hume and the psychology of human perception as described by Robert Sugden. Merrill, ‘Accession,’ supra note 3 at 477–8.

³² The doctrine of *accessio* applies when two different items were joined together in a production process; *specificatio* applies when A owned raw material that was converted by B’s labour into a different product. Merrill, ‘Accession,’ supra note 3 at 466;

intellectual property literature, for instance, with regard to the ‘mistaken-improvements’ doctrine on existing patents.³³ There is also a recent discussion in the literature regarding the doctrines of accession and accretion in the context of shifting waterfront borders.³⁴ The discussion here, however, is concerned with a broader understanding of what Merrill calls the principle of accession as a general mechanism for allocating entitlements. For ease of exposition, I use the term accession to denote this broader principle.

Even within the literature on the broader principle of accession, however, there are two understandings of the term ‘accession.’ In Merrill’s account, as noted, accession relates to the annexation of something new to something already existing.³⁵ Henry Smith³⁶ and Christopher Newman,³⁷ however, view accession as a means of defining the boundaries of the pre-existing right or the ‘thing’ in question. On their account, accession is about defining the scope of something existing rather than being a principle of acquisition with regard to something ‘new.’ So the question, according to Smith and Newman, is whether the scope of the already-existing right or thing includes or excludes the additional increment in value.

Christopher M Newman, ‘Transformation in Property and Copyright’ (2011) 56 *Vill L Rev* 251 at 124–5 [Newman]; see also Yun-Chien Chang, ‘An Economic and Comparative Analysis of Specificatio (The Accession Doctrine)’ (2013) 39 *Eur J L & Econ* 225 (discussing the doctrine of *specificatio*); Merrill & Smith, ‘Property,’ supra note 19 at 165 (distinguishing between the principle of accession and the narrower common law doctrines of accession). American courts today tend to use the word accession to cover both of these doctrines. Merrill, ‘Accession,’ supra note 3 at 466.

³³ See e.g. Peter Lee, ‘The Accession Insight and Patent Infringement Remedies’ (2011) 110 *Mich L Rev* 175 at 178–9.

³⁴ Katrina M Wyman & Nicholas R Williams, ‘Migrating Boundaries’ (2013) 65 *Fla L Rev* 1957 at 1972, n 79: ‘Our analysis suggests that the doctrine of accretion as applied on the nation’s coastal shores is not best understood as an example of the principle of accession’; Joseph D Kearney & Thomas W Merrill, ‘Contested Shore: Property Rights in Reclaimed Land and the Battle for Streeterville’ (2013) 107 *Nw UL Rev* 1057 at 1062.

³⁵ Merrill, ‘Accession’ supra note 3 at 463.

³⁶ Smith, ‘Elements of Possession,’ supra note 21 at 66: ‘[T]he task of the principle of accession’ is ‘defining thinghood,’ which is ‘a matter of salience and background knowledge’ and ‘which respond[s] in part to what is useful’; also see Henry E Smith, ‘The Thing about Exclusion’ (2014) 3 *Brigham-Kanner Property Rights Conference Journal* 110 at 112 [Smith, ‘The Thing about Exclusion’] (discussing ‘salience’ and how accession is a ‘way[] of getting at thing definition.’ It should be noted that according to Smith, possession is likewise a means of defining a thing (*ibid*).

³⁷ Newman, supra note 32 at 270–1, n 70: ‘I think that what Merrill sees as doctrines about making an efficient allocation of newly discovered resources are really doctrines about defining the boundaries of already-owned ones.’

Despite the terminological confusion this may cause, as long as both accounts (accession as acquisition and accession as the scope of right) are concerned with distinguished assets or increments of value, I suggest that they essentially function in the same way and ask the same question: does the ownership of X entitle the right-holder to own Y? Merrill answers the question by examining whether there is – or is not – a prominent connection between X and Y. Smith and Newman answer by defining the scope of X to include or exclude Y. Either way, there is a question about the ownership of an asset (Y) that is determined based on the ownership of an existing asset (X).³⁸

To illustrate, consider the example of a field and the crops growing on it and assume that the crops are assigned to the owner of the field. How did that result come about? Merrill shows a prominent connection between the field and the crops.³⁹ Smith might see the crops as an integral part of the field based on the ‘salience’ of the relationship between the two.⁴⁰ However, at least from a functional perspective,⁴¹ the result would be the same.⁴² I return to this point later on in order to show how the same is true specifically within the hybrid mode of allocation.⁴³ I use the term ‘accession,’ therefore, to include the approaches of Merrill, Smith, and Newman because, as a functional matter, the crops are assigned either way to the owner of the land, based on her ownership of that land.

38 Eric Claeys makes a similar point about difficulties in drawing the line, maintaining that the discussion around accession should be understood as a ‘scaling’ problem, and when seen as such, ‘accession renews the “no guidance in determining the scope of the right” criticism against labour theory.’ Claeys, ‘Productive Use in Acquisition,’ *supra* note 15 at 29.

39 Merrill, ‘Accession,’ *supra* note 3 at 465 (explaining why crops are accessionary to land).

40 Smith, ‘Elements of Possession,’ *supra* note 21 at 66; Smith, ‘The Thing about Exclusion,’ *supra* note 36 at 110–12 (discussing ‘salience’).

41 While I maintain this is the case from a functional perspective, I acknowledge it may not be so on the normative account of accession. See note 94 in this article.

42 Moreover, the two approaches seem to eventually run into some of the same analytical problems. Newman, for instance, sees the question as one of ‘identity’ in the sense that we need to identify whether there is in fact a separate thing to be owned. He suggests, ‘the identity inquiry . . . focus[es] largely on social intelligibility – would people naturally tend to conceive of the original thing and the new thing as the “same thing” or not?’ Newman, *supra* note 32 at 271. However, this does not seem analytically simpler or clearer than asking if there is a ‘prominent connection’ between the existing asset and the new one, as Merrill does. Merrill, ‘Accession,’ *supra* note 3 at 463.

43 See *infra* notes 80–4 in this article and accompanying text (discussing how the two accounts of accession ultimately function the same within the hybrid model, for example, in the allocation of groundwater)

Property scholarship, thus, identifies two modes of allocation – based either on existing ownership structures (accession) or on a race to establish title (first possession). Merrill ‘challenges first possession’s claim to preeminence’ by introducing the principle of accession into the discourse, as a ‘distinct way of initiating ownership.’⁴⁴ On this account, first possession and accession have ‘distinct spheres of application,’⁴⁵ and they compete with each other as a means for establishing original ownership.⁴⁶

B HYBRID RULES OF INITIAL ALLOCATION

This article challenges the dominance of either first possession or accession as ‘pure’ and distinct modes of allocation. Since neither of the two typically exist in isolation, mixed mechanisms are often more pervasive in allocating original ownership than simply an application of one rule or another. Specifically, the mix of these two mechanisms tends to follow a particular pattern, which works in the following way. First, the group of participants is ascertained by drawing on some form of existing status structure. Accession thus acts essentially as a threshold to establish the group of participants. It answers the question of who can potentially claim title to the resource. Once the group is established, a race takes

⁴⁴ Merrill, ‘Accession,’ supra note 3 at 460.

⁴⁵ Ibid.

⁴⁶ Merrill does note, albeit in passing, that the two modes of allocation complement each other (ibid). Although it is not clear how Merrill views them as doing so. Recently, Henry Smith has suggested (although in a slightly different context) that ‘[p]ossession and accession go hand in hand and are closely involved in the delineation of the legal things of property.’ Smith, ‘The Thing about Exclusion,’ supra note 36 at 111. Yet further clarification is needed as to how exactly ‘closely involved’ are the two and what that relationship entails. Lastly, Dean Lueck’s, supra note 1, analysis of first possession analyzes, in addition to the classical open race, a race that takes place among a smaller group of participants, in which ‘a kind of rule of capture [is created] *within the exclusive group*’ (at 406 (emphasis in original)). In addition, as discussed below (see infra note 69 in this article and accompanying text), Lueck’s point about the heterogeneity of claimants and its role in limiting wasteful dissipation in a race, ties in with the limiting role accession plays in the hybrid model. Thus, despite using other terms, Lueck’s analysis does in some sense contemplate a hybrid-like situation. His analysis, however, comes from the perspective of limiting race-related dissipation, whereas I see the hybrid functioning as a way to mutually mitigate the difficulties of both first possession and accession (see the discussion in Part III.A of this article).

More generally, one may argue that the scholarship speaks about these allocation mechanisms as ideal types and separates between them only for the sake of clarity of discussion. Generally speaking, I would resist this characterization. See e.g. the way Merrill frames the discussion. Merrill, ‘Accession,’ supra note 3 at 460. Moreover, even if these allocation methods are discussed as ideal types, it is nonetheless important to acknowledge the role hybrids play.

place, based on first possession, to determine who among that group of potential claimants will in fact gain title or, rather, to determine the scope of their rights (how much can each one take).

Importantly, the race is not open to all but only to the identified claimants within the accessionary circle, those that have already been given a special status based on a pre-existing asset that they hold. The threshold asset does not have to be a tangible one such as land or a cow. It can also be in the form of monetary resources or other intangible assets. The degree of pre-existing resources that are necessary to participate in the race could also vary significantly between different resources and situations, as the examples below illustrate. The point is that either way the existing owner has a distinct status as the holder of resources and that these resources act as a prerequisite for participating in the race.

Naturally, not every allocation of rights exhibits this mixture of accession and first possession. The two allocation mechanisms – accession and first possession – can in fact be seen as two ends of a spectrum, where ‘pure’ forms of accession and first possession exist on both ends but in-between elements of each rule appear in varying degrees. We may find examples that fall right at one end of the spectrum (or close to it). For instance, when the accessionary ties necessary to participate in the race are weaker, we are closer to the pure form of first possession. In the case, for example, of gold miners in the American West in the nineteenth century.⁴⁷ The accessionary ties seem to play a minuscule role (if at all), and the allocation essentially turns on possession.⁴⁸ On the other end of the spectrum, we can think of the paradigmatic case of the calf and the mother cow,⁴⁹ where the competitive element seems so small that we are in fact closer to a pure form of accession. However, as the examples in the following section illustrate, many familiar examples do fall somewhere on the continuum of allocation modes that represent a mixture of both methods.

C EXAMPLES OF HYBRID ALLOCATIONS

The pattern of hybrid allocation of original ownership is present in many examples that are familiar to property scholars. Consider first the case of groundwater. Historically, the use of groundwater was dominated

⁴⁷ See McDowell, *supra* note 12 at 3.

⁴⁸ Technically speaking, one would need a shovel or other mining tools to participate in the race. But these are sufficiently low barriers to entry such that we can see them as practically not limiting entrance, and, thus, the allocation essentially turns to possession.

⁴⁹ Merrill, ‘Accession,’ *supra* note 3 at 464.

by the ‘English Rule’ approach.⁵⁰ The rule gave each landowner complete freedom to withdraw and use groundwater underlying her land, regardless of the effect on her neighbours.⁵¹ Since groundwater lies underneath several properties, the result was that the first to capture groundwater would benefit at the expense of her neighbour.⁵² Therefore, at first glance, this may seem like a rule of first possession. However, importantly for our purposes, the privilege to extract groundwater was only provided to owners of overlying land.⁵³ Thus, groundwater was in fact dominated by a hybrid rule of initial allocation, where the ownership of the land (the existing resource) delineated the group of potential claimants by accession, and it was only once the circle of participants was established that a race to capture the groundwater itself took place between them, based on first possession.

The same could be said about the regimes governing the extraction of oil and gas in the late nineteenth and early twentieth centuries, which were generally considered rules of first possession, since the first to capture the oil would gain title over it.⁵⁴ Yet classifying them solely as rules

50 The English Rule originated – as the name suggests – from the English case of *Acton v Blundell*, 152 Eng R 1232; 12 M & W 347 (Tindal CJ), where the court held that the subterranean water was considered part of the soil, and, hence, the landowner could do with it ‘as he wished’ (at 347). For an insightful discussion of the *Acton* case and its later adoption by American courts, see Michael Taggart, *Private Property and Abuse of Rights in Victorian England: The Story of Edward Pickles and the Bradford Water Supply* (Oxford: Oxford University Press, 2002) at 107, 134. The English Rule is also sometimes known as the ‘Absolute Dominion Doctrine.’ See generally Joseph W Dellapenna, ‘The Rise and the Demise of the Absolute Dominion Doctrine for Groundwater’ (2013) 35 U Ark Little Rock Rev 291).

51 Dukeminier et al, supra note 6 at 37–8; Gerhart & Cheren, supra note 6 at 1045–6.

52 Restatement (Second) of Torts 1979, ch 41, topic 4, introductory note. See also Dukeminier et al, supra note 6 at 37–8; Gerhart & Cheren, supra note 6 at 1045. Today, however, most US states employ a regime that accounts for the shared nature of groundwater, at least to some degree. See Christine A Klein et al, *Natural Resource Law: A Place-Based Book of Problems and Cases*, 2d ed (New York: Aspen, 2009) at 886; see also generally Joseph W Dellapenna, ‘A Primer on Groundwater Law’ (2013) 49 Idaho L Rev 265.

53 Merrill understands the extraction of groundwater by landowners as an example of the *ad coelum* doctrine, which he believes to be ‘one of the most important incarnations’ of the accession principle. Merrill, ‘Accession,’ supra note 3 at 467; see also notes 156–7 in this article and accompanying text, discussing the *ad coelum* doctrine as a principle of accession.

54 See Lincoln Davies et al, *Energy Law and Policy* (St Paul, MN: West Academic Publishing, 2014) ch 3, s 2; Gerhart & Cheren, supra note 6 at 1044; *Brown v Spillman*, 155 US 665 at 669–70 (1895) (describing the rules for oil and gas in their early days as ones of first possession); See Joseph P Tomain & Richard D Cudahy, *Energy Law in a Nutshell*, 2d ed (St Paul, MN: Thomson Reuters, 2011) at 224; Robert E Hardwicke, ‘The Rule of Capture and Its Implications as Applied to Oil and Gas’ (1935) 13 Tex L Rev 391 at

of first possession overlooks the role that ownership of pre-existing assets, and specifically landownership, played in the initial allocation. The right to drill was not granted to everyone – only to landowners. Here again, landownership acted as a precondition – a threshold – for participating in the race to capture. The rules governing wild animals provide yet another similar example.⁵⁵

The same hybrid pattern can hold true even when the accessionary threshold is not necessarily related to landownership. Catching a home run baseball that has been hit out of the playing field, for instance, is typically regarded as an example of first possession, given the capture element.⁵⁶ However, notice that, at least in practice, only those who purchased tickets to a specific section within the stadium are in a position to capture the ball. So participation in the race, at least de facto, depends on a previous property status through accession.

The same hybrid pattern of allocation, which combines accession and first possession, also holds across other types of property entitlements, including use rights that are time limited. To illustrate, consider an example that has captured the attention of property scholars: street parking.⁵⁷ Traditionally, the dynamics around parking spots were described as one of first possession, as the first driver to park her car in a parking spot gained (albeit temporary) title over it. Today, however, several cities are turning to permit-based parking systems. Absent a permit, parking on the street is either prohibited altogether or restricted to a short period

393 (noting that a landowner could drain oil and gas from beneath another owner's land without liability, where the first to capture the oil gains title).

⁵⁵ The rules governing wild animals are often regarded as ones of first possession. See e.g. Epstein, 'Possession,' supra note 1 at 1224, discussing *Pierson*, supra note 2). Merrill, however, argues that based on the doctrine of *ratione soli* (by reason of the soil), rights in wild animals today are awarded to the owner of the land on which they are killed or captured, and, thus, wild animals are governed more by an accessionary rule than by one of first possession. Merrill, 'Accession,' supra note 3 at 470. Merrill discusses wild animals as an example of a 'contested issue,' in which 'the law is uncertain about whether ownership . . . should be assigned by first possession or accession' (ibid). I suggest, however, that a hybrid is a more accurate description. If ownership of land is a precondition to access wild animals, then indeed there is an element of accession at play, as Merrill suggests. However, establishing title over the wild animal still requires, at the second stage, an actual hunt and capture of the animal, under first possession, such that a hybrid rule is formed.

⁵⁶ See Merrill & Smith 'Property,' supra note 19 at 108–9. And, indeed, the discussion in the famous case of *Popov v Hayashi* was framed in terms of capture and possession. *Popov v Hayashi*, 2002 WL 31833731 (Cal Sup Ct, San Francisco County, 2002).

⁵⁷ See e.g. Richard A Epstein, 'The Allocation of the Commons: Parking on Public Roads' (2002) 31 J Legal Stud S 515.

of time.⁵⁸ As Merrill argues, since the permits are provided to those that live or work on the street, the allocation of permits is tied to pre-existing ownership structures and, hence, allocated through accession.⁵⁹ Although, here again, instead of demonstrating either first possession or accession, there is in fact a mix of the two – one needs to be a resident to establish an accessionary relationship and, in this case, to gain a permit. However, the permit (mostly) does not assign each resident a specific parking spot. Rather, it gives the residents permission to enter into a competitive race for the existing parking spots on a particular street or area. In this case, the interest awarded to winners is essentially a usufruct – a time slice – but the mechanism for gaining it remains the same nonetheless.

Another interesting example relates to a playground in the heart of Greenwich Village in New York City. The playground, known as the ‘key park,’ is so named because the entrance to it is limited only to key holders. Keys are only allocated to families with children that reside on the nearby streets.⁶⁰ In addition to the typical playground fixtures such as slides and swings, the key park features a wide variety of floating toys that are scattered on the ground. These include balls, trucks, tricycles, and more. According to the customary rule of the park, once a child picks up a toy, she is entitled to play with it. When the toy is put down, it can be picked up and used by another child, and so on. The dynamics of the key park nicely illustrate the hybrid pattern. In this example, the assets to which the rights are assigned are the floating toys. The first step is gaining access to the park, which is allocated by virtue of owning or renting an apartment nearby. This is the accessionary threshold. At the second stage, a child needs to physically pick up a toy (possess it) in order to establish her entitlement to play with it. In this case again, like with the parking example, the right is temporally limited. The hybrid pattern, however, nonetheless remains the same.

58 For but a few examples of such schemes, see San Francisco Municipal Transportation Agency, *Program Background and Information*, online: <<https://www.sfmta.com/services/permits-citations/parking-permits/residential-area-permits/program-background>>; City of Boston, *Resident Parking Permit*, online: <<http://www.cityofboston.gov/Parking/residentparking/>>; Toronto, *Permit Parking*, online: <<http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=bec6a84c9f6e1410VgnVCM10000071d60f89RCRD&vgnextchannel=cd4c4074781e1410VgnVCM10000071d60f89RCRD>>.

59 Merrill, ‘Accession,’ supra note 3 at 472.

60 See *Application Form for Washington Square Playground*, online: <<http://www.nyu.edu/content/dam/nyu/facultyHousing/documents/Forms/WSV.Playground.APP.2013.pdf>> (detailing the boundaries of the area within which residents are eligible to apply for keys). The park is owned by New York University and managed by Cushman and Wakefield. See New York University, *WSV Key Park*, online: <<http://www.nyu.edu/life/living-at-nyu/faculty-housing/policies/key-park.html>>. All knowledge of the park’s customary rules is based on my own experience.

Lastly, another particularly interesting and contemporary illustration of the hybrid allocation is the case of wind. The fourth Part of this article explores this example in further detail.

III *The functionality of hybrid rules*

A COMPLEMENTARY RULES

A hybrid allocation rule is a particular mix of accession and first possession, where the former acts as a threshold requirement to limit the pool of claimants that participate in the race to establish an entitlement.⁶¹ The discussion that follows aims to provide one possible explanation as to why hybrid mechanisms are used. It suggests that this is the case because the two rules complement one another by partially mitigating each other's shortcomings.

To understand why this is the case, consider first the difficulties in applying a rule of capture, which concern the dissipation of resources in the race to acquire ownership. This point has been illustrated and studied in many contexts.⁶² Each contestant has an incentive to outspend other contestants up to the value of the prize – the asset for which they are competing.⁶³ In a race with only one winner, all of the resources that are spent by the 'losers' are wasted. Rather than putting these resources to other productive purposes, all of the losing contestants have spent their resources on a race that was not fruitful.⁶⁴

Decreasing the total expenditure in the race would decrease the dissipation of rents.⁶⁵ One way of doing this is to limit the number of participants in the race.⁶⁶ Assuming that each contestant in the race spends

⁶¹ See discussion in Part II.B of this article.

⁶² See Lueck, *supra* note 1 at 394 (reviewing the literature on this point); Yoram Barzel, 'Optimal Timing of Innovations' (1968) 50 *Rev Econ & Stat* 348 (regarding patents) [Barzel]; Terry L Anderson & Peter J Hill, 'The Race for Property Rights' (1990) 33 *J Law & Econ* 177 (in the context of homesteading) [Anderson & Hill, 'The Race for Property Rights']; Gary D Libecap & Steven Wiggins, 'Contractual Responses to the Common Pool: Prorating of Crude Oil Production' (1984) 74 *Am Econ Rev* 87 (showing the dissipation in the context of oil and gas).

⁶³ See generally Anderson & Hill, 'The Race for Property Rights,' *supra* note 62; Terry L Anderson & Peter J Hill, 'Privatizing the Commons: An Improvement?' (1983) 50 *S Econ J* 438 at 442.

⁶⁴ See Lueck, *supra* note 1 at 399; Haddock, *supra* note 10 at 777–8.

⁶⁵ See Haddock, *supra* note 10 at 778.

⁶⁶ Another way to limit the dissipation of rents could be capping the amount each participant can spend. The argument here is not meant to suggest that limiting the number of participants is the only way to decrease the dissipation of rents, only that it is one possible way to do so.

resources in an effort to obtain the prize, the more contestants in the race the more resources will be spent, whereas if the number of contestants is limited, then the overall amount of wasted resources will also be limited. Accession helps decrease the dissipated resources by doing just that – limiting the number of contestants in the race. An accessionary threshold helps mitigate the dissipation of resources in the race to acquire ownership by narrowing the pool of claimants.

Moreover, the threshold requirement set by accession means that the participants in the race are only the ones that are already in a relatively good position to compete for the prize, which means they need to spend less resources in the race compared to other claimants that lack this advantage.⁶⁷ This means that, overall, fewer resources are wasted in the effort to claim the prize. The advantage certain claimants have could be due, *inter alia*, to their physical access to the resource.⁶⁸ Consider, for instance, the resources that a non-landowner will need to spend in order to gain access to groundwater in a particular location as compared to the landowner who already has easy access to it. Consider also how gaining access to capital will likely be easier for those that already have initial capital based on existing property.

Relatedly, limiting the circle of claimants based on their already-existing property holdings could also increase their homogeneity, which as Dean Lueck shows, serves to limit the dissipation of wealth in the race.⁶⁹ On this account, a group of landowners is likely to be more homogeneous, at least with respect to the cost of extracting groundwater, than a group that does not share the same features.

More broadly, this could also point to the effects of proximity in narrowing the class of potential claimants.⁷⁰ Proximity in this context acts much like accession does, in setting (at least *de facto*) limitations on who can participate in the race. Consider, for instance, what would

⁶⁷ Merrill similarly argues that accession mitigates the pathologies of first possession. Merrill, 'Accession,' *supra* note 3 at 482–8. My points here can be taken as a more nuanced version of his argument in this regard. The difference is that while I accept the advantages accession has in limiting the pathologies of first possession, I reason that first possession has some advantages of its own, which is why we see the prevalence of mixed regimes that try to find a balance point between the two.

⁶⁸ See similarly in the context of accession (*ibid* at 489).

⁶⁹ Lueck, *supra* note 1 at 399–400: '[C]laimant heterogeneity reduces and possibly eliminates the dissipation of wealth . . . as the heterogeneity of claimants . . . increases the level of dissipation will decrease.' Lueck also makes the point, albeit using different terms, that a regime that restricts access to the resource avoids some of the dissipation associated with a completely open race (*ibid* at 405). Lueck frames this in terms of 'common property,' although in my framework I think of it as the accessionary circle of permitted claimants.

⁷⁰ I am grateful to Lee Fennell for encouraging me to consider this point.

happen if the key park in New York City did not actually require a key to enter but was simply a neighbourhood park. The race for a particular toy truck would still be limited, at least in practice, to children that lived close enough to be brought there or perhaps a smaller group of children that are visiting from elsewhere. In this case, there is no formal limitation on the group of claimants, but the proximity to the resource serves a similar purpose of narrowing the class of potential claimants.⁷¹

Other limitations attributed to first possession relate to the inadequate incentives it sets with regard to over-exploitation,⁷² or, rather, premature exploitation,⁷³ of the resources. In a world of first possession, since the establishment of rights holds a temporal element (priority for the first in time) or requires continuous use, each user is encouraged to use as much of the resource as they possibly can and as soon as they can, regardless of whether such use is actually necessary at the time.⁷⁴ This can also be understood in the reverse as a problem of insufficient incentives for cultivation and improvement – a race to capture resources assumes that such resources are drawn from an open access pool. Yet, in a situation where resources are open to all, participants might have insufficient incentives to invest in the pool from which resources are drawn.⁷⁵

This too can be somewhat mitigated by limiting the number of potential claimants in the race. With a smaller pool of claimants, each one has a larger stake in the potential prize and, therefore, less of an incentive to over-exploit or, rather, more of an incentive to cultivate. Under ‘pure’ accession, the pre-existing owner would realize all of the benefits and all of the costs with regard to the new asset, and, as a result, there would be no wasteful consumption.⁷⁶ The hybrid case can be seen as a more nuanced form of the same line of argument where, rather than claiming

71 A similar discussion arises in the context of distance as a *de facto* exclusionary mechanism. Thráinn Eggertsson, ‘Open Access Versus Common Property’ in Terry L Anderson & Fred S McChesney, eds, *Property Rights: Cooperation, Conflict, and Law* (Princeton, NJ: Princeton University Press, 2003) at 73, 76.

72 See Lueck, *supra* note 1 at 394; Haddock, *supra* note 10 at 779.

73 See Haddock, *supra* note 10 at 776–7; Anderson & Hill, ‘The Race for Property Rights,’ *supra* note 62.

74 See e.g. Robert Cooter & Thomas Ulen, *Law & Economics*, 3d ed (2000) at 113; Douglas A Kysar, ‘Law, Environment, and Vision’ (2003) 97 *Nw UL Rev* 675 at 699; Barzel, *supra* note 62 at 348; Daphna Lewinsohn-Zamir, ‘More Is Not Always Better Than Less: An Exploration in Property Law’ (2008) 92 *Minn L Rev* 634 at 686.

75 See generally Harold Demsetz, ‘Toward a Theory of Property Rights’ (1967) 57 *Am Econ Rev* 347. This also follows generally from the ‘tragedy of the commons’ type of analysis of a shared resource. See H Scott Gordon, ‘The Economic Theory of a Common-Property Resource: The Fishery’ (1954) 62:2 *J Pol Econ* 124; Garrett Hardin, ‘The Tragedy of the Commons’ (1968) 162 *Science* 1243 [Hardin].

76 Merrill, ‘Accession,’ *supra* note 3 at 484.

100 per cent of the benefits and costs, the owner is simply increasing her stakes in the new assets and, thus, has more of an incentive to avoid over-exploitation or to invest in cultivation.

Lastly, since first possession operates against a background of open access, it can increase the costs of cooperative behaviour among the potential claimants and thus reduce the possibility of achieving a mutually advantageous agreement or action.⁷⁷ Here again, limiting the number of potential claimants through accession may make it easier. A smaller group of claimants created by the accessory status could be more likely to cooperate or avoid overuse.⁷⁸

The question, then, is why do we see combination hybrid regimes and not solely accessory ones? While accession is helpful in mitigating some of the difficulties of first possession, it is, at the same time, often not sufficient in itself to fully allocate the entitlements to the new resource. To see why, consider again the example of groundwater, wherein the aquifer crosses through several tracts of land. In this case, the assignment of the newly created rights to every landowner in itself is not sufficient in the sense that it does not tell us what rights and responsibilities each landowner holds. How much water can each landowner extract or for how long may they continue extracting? Do they have obligations to respect other landowner's rights or can they extract regardless of any possible effects on their neighbours? Simply assigning landowners the rights to access the aquifer does not answer these questions. Accession may therefore be suitable for identifying the right-holders, but it is sometimes insufficient in determining the scope of the new entitlements.

One may argue that the examples presented here are not truly illustrations of accession but, rather, just examples of how attributes of ownership provide the right-holder with preferential access to claimable resources within.⁷⁹ However, even if one takes this approach, the functional mechanism remains the same. Recall that within the literature on the principle of accession, there are two understandings of the term. According to Smith and Newman, accession is about determining the

⁷⁷ Ibid at 485–6 (following Robert Ellickson's influential analysis that shows that agreements become more difficult in an open access). Robert C Ellickson, 'Property in Land' (1993) 102 Yale LJ 1315 [Ellickson, 'Property in Land'].

⁷⁸ This too can follow from Robert Ellickson's famous discussion about the increased ability of smaller groups to engage in cooperative behavior. Ellickson, 'Property in Land,' supra note 77 at 1322–35; Robert Ellickson, *Order without Law: How Neighbors Settle Disputes* (Cambridge, MA: Harvard University Press, 1991) [Ellickson, *Order without Law*].

⁷⁹ Relatedly, see notes 35–43 in this article, discussing Newman and Smith's approaches as opposed to Merrill's approach.

scope of the existing thing, whether it includes or excludes the additional increment of value in question, based on ‘salience’⁸⁰ or ‘identity.’⁸¹ According to Merrill, accession assigns new increments in value to holders of existing things based on a ‘prominent connection’ between the two.⁸² To illustrate how both approaches run into the same functional difficulty, consider how the example of groundwater would play out under both accounts.

Consider, first, how groundwater is allocated according to Smith’s approach. According to Smith, access to groundwater would be encompassed within the right to land based on the ‘salience’ and ‘economic usefulness’ of bundling the two together.⁸³ Thus, a landowner would get access to the aquifer assuming there was a salient relationship between the groundwater and the land she owned. However, assuming also that the aquifer underlies multiple plots of land, many landowners likewise would have the same salient relationships with the groundwater. So even if the landowner in our example does have a salient relationship, it is not a unique one, at least not as compared to other landowners. Salience therefore only gets us so far. To establish title to a specific gallon of water, one would still need to possess it, by pumping it.⁸⁴

Now consider, alternatively, how the same example would play out under Merrill’s approach. According to Merrill, if groundwater is prominently connected to the land overlying it, it is accessionary to landownership. Here again, however, simply gaining access to the aquifer is not

80 Smith, ‘The Thing about Exclusion,’ *supra* note 36 at 110–12; Smith, ‘The Elements of Possession,’ *supra* note 21 at 66.

81 Newman, *supra* note 32 at 270–1.

82 Merrill, ‘Accession,’ *supra* note 3 at 463. Merrill does acknowledge that ‘even if we assume accession is about the scope of rights, it still functions as a means of establishing original title to the objects to which it applies’ and ‘[t]he question of proper characterization here does not appear to make any difference in terms of institutional analysis’ (at 481–2).

83 Smith, ‘The Elements of Possession,’ *supra* note 21 at 66–7.

84 Theoretically, on Smith’s account, as I understand it, a salient relationship could be established between one single landowner and the entire aquifer, such that she would not need to pump water in a specific bucket to claim title. However, this would likely be the case only if there are special circumstances that set her apart from others and that speak to the unique salience of her particular relationship – for instance, if the entire aquifer was underlying only her land. However if, as is usually the case, an aquifer runs under multiple plots of land, it is not clear how salience in itself would choose among them, since they all have similar relationships to the aquifer. And, importantly, the very same could be said of Merrill’s account – a prominent connection could, in theory, be established between a single landowner and the entire aquifer, in certain circumstances. Although absent these circumstances, and assuming the aquifer runs under multiple landowners, accession in itself does not establish one single connection that is stronger than others.

enough to establish title in a specific gallon of water, precisely again because multiple landowners have the same prominent connection. One still needs to possess it. Put more generally, both of these approaches essentially identify the group of people that could access a resource, but, at least where multiple owners have the same connection, neither of these accounts answers the question how much of the resource each one can take.

Therefore, under both accounts, we see a two-step process: first, an assignment of rights to access the groundwater, which is determined based on ownership of land, and, at the second stage, a race to possess a specific portion of it. In this sense, the two accounts operate in precisely the same way. Thus, whether one sees the privilege of landowners to access groundwater or oil as an extension of their ownership or, rather, as an allocation of new rights as accessionary to their ownership, one must recognize that to establish title to a specific gallon of water or barrel of oil, one still needs to extract it in order to possess it. Accession, in itself, does not help us draw the line.

Accession can also run into another related problem. In certain cases, accession can delineate the group of potential claimants, but it cannot tell us who among them gets the right. Consider the example of toys in the ‘key park.’ Access is provided through accession – in this case, based on residency in the area – but simply entering the park does not tell us which child gains title over a specific toy truck. The same can be said about obtaining urban parking spots or home run baseballs.

Notice that under the framework presented here accession is insufficient in fully allocating the entitlement when it does not provide a unique connection with one right-holder. This happens when multiple claimants have equally prominent or salient connections and when the connection in itself does not provide a way of choosing among them. The landowners overlying an aquifer, for example, all establish an equally prominent connection to the groundwater. Likewise, all children at the key park have an equally salient connection to it, and, therefore, their admittance to the park in itself does not solve the problem of who can play with a particular toy truck at a given moment.

This will often occur when the resource in question is fluid and migratory or, more broadly, when there are multiple units that need to be shared. With a newborn calf, it is hard to imagine a Solomonic solution that allows claimants to compete for only a leg or an arm. But we can easily imagine a competition for a barrel of oil or a bucket of water. We can likewise imagine a child claiming one out of the multiple toys in the park but probably not half of a toy truck. The difference is that a calf is seen as a single unit, whereas resources such as water, oil, or wind are seen as a larger group from which we can designate parts. Notice that if

the question was regarding a herd of calves, the answer might have been different.⁸⁵ In this case, the resource is defined in terms of a large continuous group that is subject to quantitative allocation (one can own a third of the herd or five calves).⁸⁶ However, when a resource is (at least perceived as) undividable, it is more amenable to producing a unique solution.⁸⁷

Indeed, in some instances, a divisible resource could be prominently identified with a unique right-holder. A small lake, for instance, could be wholly contained within one's land, such that a unique prominent connection is established between the entire lake and a single right-holder. However, often divisible resources lend themselves more easily to fuzzier, less crystalized solutions, and, in these cases, accession does not provide a unique solution and a supplementary mechanism is necessary in order to finish the task of allocation.

That is where first possession fits in. First possession can be seen as determining who within the group of claimants wins the prize of entitlement. Under this framework, accession still defines the group of potential competitors, but first possession acts to identify the winners from among that group. Consider again the key park example. Accession defines the group of potential claimants (children residing in the nearby area), and first possession then determines who among them establishes the entitlement (the first to pick up a toy).

⁸⁵ For instance, if the calf were born into a herd of cattle that included females owned by several individuals, where the calves were immediately weaned and their mothers could not have been ascertained.

⁸⁶ This analysis would likewise apply for the case of parking spaces: a single parking spot may not be a continuous resource. However, if we think about allocating all of the parking spots on the street or neighborhood, then it becomes a continuous resource from which we can delineate units. One can own two parking spots, a third of all parking spots on the street, and so on.

⁸⁷ The notion that certain features of a resource can impact the way in which a property regime evolves is addressed by some scholars through the lens of measurement and enforcement costs. Specifically with regard to fugitive resources such as fisheries, air, and water, the literature has discussed the difficulties in measurement and enforcement that may lead to a slower development of property regimes or tend to develop in a specific manner. See e.g. Gary D Libecap, *Contracting for Property Rights* (New York: Cambridge University Press, 1989) at 26; Katrina M Wyman, 'From Fur to Fish: Reconsidering the Evolution of Private Property' (2005) 80 NYU L Rev 117 at 197; specifically with regard to water, see Henry E Smith, 'Governing Water: The Semicommons of Fluid Property Rights' (2008) 50 Ariz L Rev 445; Terry L Anderson & PJ Hill, 'The Evolution of Property Rights: A Study of the American West' (1975) 18 JL & Econ 163 at 167. The discussion here contributes to the discourse by underscoring specifically the factors that make hybrid allocation mechanisms more helpful or likely with such resources.

In addition, at least in some cases, first possession can be more helpful in defining the scope of the newly acquired right. The answer to the question of ‘how much’ can, for instance, be as much as can be beneficially used or as much as can be captured at a given point in time.⁸⁸ First possession can indeed be tricky to apply, and it does not always provide a crystalized solution. The question of what amounts to possession and of what constitutes an established property right under a rule of first possession is also subject to much scholarly debate (consider, for instance, the discussion regarding *Pierson v Post* and the question of what constitutes ‘possession’ of the fox⁸⁹ or the discussion regarding what amounts to ‘capture’ of a whale for the purpose of establishing possession).⁹⁰ Moreover, one may argue that defining quantity (how much water can one pump) is not necessarily easier under first possession than under accession.

Yet the inherent requirement to possess a part of the new resource often does embody a quantitative aspect that more readily answers the question of how much – for example, as much as can be beneficially used or as much as captured at a given point in time. Alternatively, it may embody a temporal element – for example, for how long does the right hold, which could be, for instance, for as long as a car is parked in a particular parking spot.

There is a key difference in the way the rules of accession and first possession are structured and articulated, which is instrumental in defining a quantitative or temporal aspect of the new right. The starting point for accession is the existing right. This perspective warrants more of a focus on the existing asset, its strengths, and contours. First possession, however, cares about possessing. As such, it almost necessarily has to say something about how much is in one’s possession or for how long. The emphasis on possession lends itself to such definitions more easily than the focus on an existing right. First possession thus more often defines

88 One may argue that there are other restrictions an owner needs to adhere to aside from limiting the quantity of the resource or the period in which it is used, which *de facto* affect the scope of the right. These could range from limitations on noise, taxes, zoning, and much more. The discussion here, however, focuses more specifically on the initial allocation of entitlements; whereas these additional ‘layers’ of restrictions likely apply regardless of how the initial rights are allocated or to whom and would presumably apply to subsequent owners down the line.

89 See Rose, *supra* note 15 at 76–7; Epstein, ‘Possession,’ *supra* note 1 at 1224–45.

90 See Merrill & Smith, ‘Property’ *supra* note 19 at 89–96; Ellickson, ‘Wealth-Maximizing Norms,’ *supra* note 19. Similarly, Bruce Ziff, ‘The Law of Capture, Newfoundland-Style’ (2013) 63 UTLJ 53 (discussing the malleability of ‘possession’ in the context of seal capture practices).

the scope of the right by including a quantitative or temporal requirement or is at least more amenable to having such a requirement.

The mechanisms – accession and first possession – thus complement each other. Rather than competing against each other, they come together to form a range of hybrid regimes in which they can supplement each other. Together, they form a spectrum of allocation mechanisms that provide more nuanced management tools.

B HYBRID COSTS

To be sure, the claim here is not that hybrids are always preferable. Nor is this analysis meant to suggest that every limitation on first possession is necessarily created by accession or that every time accession fails to produce a unique solution, such a solution is provided by first possession. The claim is simply that accession–first possession hybrids do often exist and that they do because of their complementary structure that allows both rules to alleviate some of the other’s weaknesses.

Such hybrids, however, could also suffer from inefficiencies. As a combination of two regimes, they might suffer, for instance, from increased administrative costs. Coupling two rules together could make it costlier to allocate rights in certain circumstances. Moreover, the functional advantages of hybrids depend on each rule’s ability to alleviate some of the difficulties of the other rule. The ability of accession to limit the race-related dissipation depends on the ease with which ownership to the new resource can be assigned based on the existing one. This could be a result of various contextual factors, including how the resources, both existing and new, are perceived and created as well as of the existing legal landscape. Accession functions effectively, according to Merrill, when an operative system of property rights applicable to the existing resource (for example, ownership of land) exists. The system of existing property rights also needs to be ‘reasonably thick and well-defined’ and must be enforced.⁹¹ Thus, accession is not always possible or might be costlier to apply. In such cases, its ability to alleviate the difficulties of an open race is reduced.

Likewise, as mentioned earlier, the difficulties of accession in creating a unique solution – choosing among the potential claimants or defining the scope of the new rights – are most prominent when the resource in question is a continuous group from which we seek to delineate specific parts. When the resource is discrete, there is less of a need to differentiate between the questions of who gets initial access to the resource and how much each one gets or for how long. The questions merge into

⁹¹ Merrill, ‘Accession,’ *supra* note 3 at 493.

each other, and the answer is one and the same. In such a case, the advantage of combining first possession into the accessionary regime is less salient.

Presumably, however, in those cases when accession and first possession do not or cannot help each other, hybrids are less likely to exist. When the application of accession is costlier or more complex given the universe of existing property rights or the nature of the resource, accession is less likely to be able to mitigate the difficulties of first possession by narrowing the scope of potential claimants, and, consequentially, a hybrid is less likely to emerge. And, likewise, when a resource is discrete, which makes it easier for accession to produce a unique solution, there is less of an advantage to coupling accession and first possession, and, therefore, a hybrid rule will presumably be less likely to occur.

C TOWARD A MORE NUANCED NORMATIVE ACCOUNT

Recognizing hybrid rules of allocation is also important to the normative assessment of original ownership. First possession is seen as normatively appealing due to the volitional act it requires. One is required to engage in some performative act that establishes ownership, which requires an individual to willingly invest in such an act.⁹² It is also seen as being egalitarian in the sense that it provides equal opportunity to all to compete for the prize of ownership.⁹³ Thus, first possession is normatively valued under the assumption that a race is open to all and that it provides equal opportunities to everyone.

Yet, as argued, this is often not the case. The competition is actually not open to all – it is open to those in a specific category, to the accessionary circle of individuals that already hold an existing asset. It is open to all landowners, for instance, but not to all citizens of the polity. In this sense, the normative praise of first possession is perhaps overstated insofar as it relates to first possession in its ‘pure’ form. At least as a descriptive matter, the normative understanding of first possession might need to account for the more nuanced reality of hybrid regimes.

At the same time, combining first possession with accession might help soften some of the normative critiques against the latter. According to Merrill, the main normative concern with regard to accession is the egalitarian account.⁹⁴ As the argument goes, accession furthers the

⁹² See generally Locke, *supra* note 15; Epstein, ‘Possession,’ *supra* note 1.

⁹³ Merrill, ‘Accession,’ *supra* note 3 at 497–8.

⁹⁴ As opposed to the functional analysis, with respect to the normative understanding of accession, it might matter if one takes Merrill’s view or Smith’s approach. Recall that accession could either be understood as awarding entitlement in something new based on existing ownership, per Merrill, or defining the scope of something existing

wealth of existing owners while denying newcomers the possibility of gaining title. It is not open to all, and it does not provide equal opportunities to every member of the polity.⁹⁵ In Merrill's account, accession also fails to meet the Lockean justification of property since it hands the owner title even if the new assets or increments in value cannot be attributed to any labour on the part of the owner.⁹⁶

Under a hybrid allocation mechanism, although accession does act to define the group of potential right-holders, thus favouring those with existing resources, adding first possession to the mix also forces them to compete in order to fully materialize the right. Therefore, it introduces at least some element of volitional activity and an opportunity for each right-holder to increase her assets by capturing part of the new resource.⁹⁷ Thus, combining elements of first possession into the mix does not eliminate the normative critique of accession (at least according to Merrill), but it may serve to soften it.⁹⁸

to include (or exclude) the additional increment in value, as per Smith (see *supra* notes 35–43 and 80–4 in this article and accompanying text). Merrill's critique of accession as less egalitarian rests on the assumption that the asset in question is 'new,' such that in theory it could be awarded to anyone. On that account, awarding existing right-holders with the new asset increases their wealth, rather than providing opportunities for new entrants to enhance their wealth. However, if, as per Smith, increments of value are already incorporated into the existing right, then seeing them as such has not changed the existing distribution of assets. Consider, for instance, a field for which one had paid a market price that incorporates the future value of the flow of crops. On Smith's account, seeing the crops as part of the resource does not further the wealth of existing right-holders (because they have already accounted for the future crops) but, rather, merely reflects the value of the resource as a whole, over time. Thus, as opposed to the functional analysis, on the normative account, there could be a difference in the way one views 'accession.'

⁹⁵ Merrill, 'Accession,' *supra* note 3 at 499.

⁹⁶ *Ibid.*

⁹⁷ This, again, could be seen as a matter of degree: the higher the barrier to entry is, the closer we are to the accessionary end of the spectrum, and the more the un-egalitarian and un-volitional elements become prominent again.

⁹⁸ This could also be seen as dovetailing with David Schorr's account of the rise of prior appropriation in the American West. According to Schorr, adopting principles of first possession in water allocation was part of an effort to decrease the landowners' stronghold that existed under riparianism and, thus, introduce a more equitable system that allowed for more new entrants as compared to riparianism. David Schorr, *The Colorado Doctrine: Water Rights, Corporations, and Distributive Justice on the American Frontier* (New Haven, CT: Yale University Press, 2012), at 46–53 [Schorr].

IV *A contemporary illustration of hybrid allocations: the case of wind*

The case of wind is a contemporary example of an ongoing allocation that presents an opportunity to gain a fuller understanding of the mechanisms by which original ownership is created and facilitated. It also underscores the importance of hybrids with regard to a concrete challenge that policy makers are soon likely to face in allocating wind, which is an increasingly important source of energy. I study this example by focusing on the mechanisms that have recently been applied to the airborne kinetic energy within wind current. I call these ‘wind rights.’ Wind rights are essentially use rights, which provide an entitlement to harness a certain portion of the airborne kinetic energy as it passes by.⁹⁹ The practice of wind rights in the United States reveals a pattern of hybrid allocation. As the following sections show, by virtue of accession, ownership of the underlying land establishes the right to access the airborne kinetic energy blowing over it, which is then captured by first possession.

A THE COMPETITIVE EXTRACTION OF WIND

To appreciate the competitive element in wind allocation, it is imperative to understand that although wind is often considered a non-competitive resource because it is renewable, such a perception misses a crucial point about how the resource in fact behaves. Wind is the flowing or the movement of air.¹⁰⁰ Wind turbines capture some of the movement-based (kinetic) energy locked in the wind and convert it to electric energy.¹⁰¹ Importantly, when kinetic energy is extracted from the wind, a funnel-shaped wake is created in the area downwind of a turbine, in which the airstream is slowed down and made more turbulent and, overall, less

99 In this sense, wind rights can be seen as being analogous to water rights that allow the right-holder to use a certain portion of the resource as it passes by or analogous to ‘solar rights’ – the right to receive an unobstructed light beam.

100 The movement of air is caused by differences in air pressure due to alterations in temperatures. See C Donald Ahrens, *Meteorology Today: An Introduction to Weather, Climate, and the Environment* (Toronto, ON: Brooks Cole, 2006) at 203–14 [Ahrens] (describing the physical forces that create and influence the wind); see also New York State Energy Research and Development Authority (NYSERDA), *Wind Resource Assessment Handbook* (2010) at 1–1–1–2, online: <<http://www.nyserdera.ny.gov/-/media/Files/Publications/Research/Biomass-Solar-Wind/wind-resource-assessment-toolkit.pdf>> [NYSERDA].

101 Wind causes the feather-shaped blades of the turbine to rotate. The revolving blades in turn are connected to an internal gearbox that transforms the kinetic energy into electric energy by spinning large magnets. Adam M Dinnell & Adam J Russ, ‘The Legal Hurdles to Developing Wind Power as an Alternative Energy Source in the United States: Creative and Comparative Solutions’ (2007) 27 *NW J Int’l L & Bus* 535 at 539–40.

suitable for energy production.¹⁰² This is known as the ‘wind shadow’ or the ‘wind wake.’¹⁰³

The effects of a wind wake can span over significant distances. The wake is typically estimated to be eight to ten times the diameter of the rotors (blades),¹⁰⁴ which, given the dimensions of contemporary turbines, means that the wake can extend to roughly 700–1,000 metres (2,300–3,200 feet) behind a single commercial turbine,¹⁰⁵ and the cumulative effect of several turbines together, such as on a wind farm, could be even more dramatic.¹⁰⁶ The power output loss due to such wakes is also significant, reaching up to 30–40 per cent on large wind farms, according to one study.¹⁰⁷

These wind-wake effects are the essence of the competitive element with regard to wind. Harvesting the airborne kinetic energy inevitably results in a depleted breeze in the downwind direction, and, thus, a neighbour located downwind from the turbines would have less energy potential due to the depleted wind stream she is receiving.¹⁰⁸ And,

102 See Ahrens, *supra* note 100 at 200; RJ Barthelmie & LE Jensen, ‘Evaluation of Wind Farm Efficiency and Wind Turbine Wakes at the Nysted Offshore Wind Farm’ (2010) 13 *Wind Energy* 573 at 573; Shengbai Xie & Christina Archer, ‘Self-Similarity and Turbulence Characteristics of Wind Turbine Wakes via Large-eddy Simulation’ (2015) 6 *Wind Energy* 1815 at 1815; Thomas E Kissell, *Introduction to Wind Principles* (Upper Sadie River, NJ: Prentice Hall, 2010) at 31; Rebecca J Barthelmie et al, ‘Modeling and Measuring Flow and Wind Turbine Wakes in Large Wind Farms Offshore’ (2009) 12 *Wind Energy* 431 at 431.

103 The wind wake can be thought of as being analogous to a wake created behind a boat as it passes through the water. Kimberly E Diamond & Ellen J Crivella, ‘Wind Turbine Wakes, Wake Effect Impacts, and Wind Leases: Using Solar Access Laws as the Model for Capitalizing on Wind Rights during the Evolution of Wind Policy Standards’ (2011) 22 *Duke Envtl L & Pol’y F* 195 at 199 [Diamond & Crivella].

104 See James F Manwell et al, *Wind Energy Explained: Theory, Design and Application*, 2d ed (West Sussex, UK: John Wiley & Sons, 2009) at 408; Diamond & Crivella, *supra* note 103 at 204.

105 Modern, utility scale, wind turbines typically have a rotor diameter ranging between 70 to 100 metres. NYSERDA, *supra* note 100 at 1–6. Taken together, if the wind wake is up to ten times the rotor diameter, the wake could reach up to 700–1,000 metres behind a single commercial turbine.

106 See Diamond & Crivella, *supra* note 103 at 203–4.

107 B Sanderse, *Aerodynamics of Wind Turbine Wakes: Literature Review* (2009), online: <<http://www.ecn.nl/docs/library/report/2009/e09016.pdf>> at 5.

108 The effects of wind wakes could also be problematic in an urban centre with regard to smaller individual turbines positioned on rooftops, where conflicts over the use of wind could arise between residential neighbours. Importantly, the competition works both in the downwind and upwind directions. The downwind user is obviously worried about the ability of an upwind user to block her wind. But a downwind user can also compete with an upwind user in the following sense. At present, absent any concrete legal restrictions stipulating otherwise, the extraction of airborne kinetic energy is unlimited. If a downwind user is first to set up a wind farm, it is possible that her right

indeed, there is some initial evidence that conflicts over wind wakes are beginning to occur.¹⁰⁹ Thus, since the airborne kinetic energy can be captured, the first to do so gains an advantage.

The race is exacerbated by the fact that each landowner enjoys the gains produced from the energy in the wind.¹¹⁰ However, absent any legal guidance on the capture of the airborne kinetic energy, each user is free to take as much as she pleases on a first-come-first-serve basis and is not required to shoulder the costs imposed on her neighbours. Users are thus not incentivized to take full account of the wind-wake effects they are creating, which could ultimately lead them to consume the kinetic energy resources in excess of the socially optimal amount.¹¹¹

will prevail when challenged, such that the later-in-time upwind user will be forced to forgo (at least some of) her right. In this sense, the uncertainties of the current legal landscape are worrisome for an upwind user. The point is that given this situation there could be an advantage to a first mover that sets the facts on the ground so as to increase the likelihood of establishing wind rights in the future.

- 109 Such a conflict arose, e.g. between two commercial developers in Alameda County, California, who sought to develop wind farms on adjacent locations, where the downwind developer was concerned about the diminished winds that would result from the construction of the neighbouring farm further up wind. *Windpower Partners 1987 et al v County of Alameda et al*, Case A089107 (Cal Ct App, 1st District, San Francisco, 1999). In Illinois, a landowner argued, *inter alia*, that constructing a wind farm on the neighbouring property will deprive her of ‘the full extent of the kinetic energy of the wind and air as it enters her property’ (*Muscarello v Ogle County Board of Comm’rs*, 610 F3d 416 at 419 (7th Cir 2010)). The same plaintiff later challenged a county ordinance that eased the requirements for wind farm construction on the grounds that it would deprive her of the ‘full extent’ of the airborne kinetic energy. *Muscarello v Winnebago County Bd*, 702 F3d 909 at 910 (7th Cir 2012) [*Muscarello* 2012]. Judge Posner, writing for the 7th Circuit Court of Appeals, noted that indeed ‘a reduction in wind speed downwind is an especially common effect of a wind turbine’ (at 911). Although, in that case, the court found the ordinance, as such, had not violated the plaintiff’s constitutional rights (at 913–14). Lastly, concerns about the availability of kinetic energy are also reflected in the practices of buffer leasing and wind easements, discussed in Part IV.B in this article.
- 110 Moreover, these advantages are not limited to energy production (although that is the most readily used and intuitive example). Wind plays an important role in our daily lives and our natural environment. It shapes landscapes by sculpting rocks or carrying sediments (Ahrens, *supra* note 100 at 227–8); it aids plants in dispersal and reproduction (James D Mauseth, *Botany: An Introduction to Plant Biology* (Burlington, MA: Jones & Bartlett Publishers, 2008) at 208–11); and even holds an important recreational role in our lives by enabling recreational activities such as wave surfing and kite flying. In that sense, the effects of the wind wakes are not limited only to energy production but also extend to any activity that utilizes airborne kinetic energy.
- 111 This situation may also be similar to the famous tragedy of the commons created by the addition of too many cattle to the common grazing field or the tragic tendency to create air pollution. Hardin, *supra* note 75 at 1245. As maintained elsewhere, the same may be true for wind. Just like the tendency to put too much into the air, there might be a tendency to extract too much out of the air. See Yael Lifshitz Goldberg, ‘Comment: Gone with the Wind? The Potential Tragedy of the Common Wind’

Another important phenomenon in wind power extraction is saturation, which is ‘the maximum wind power that can be extracted upon increasing the number of wind turbines over a large geographic region.’¹¹² The energy output from wind turbines first increases linearly upon the addition of more turbines, but at some point, the ‘power output increases with diminishing returns until it reaches global saturation.’¹¹³ Once this point is reached, ‘increasing the number of turbines further does not increase the generated power further.’¹¹⁴ According to modelling, this is true on a global level, but it could also be true on a regional level.¹¹⁵ Returning to the context of competitive wind extraction, a saturation point means that first movers have a significant advantage compared to the latter turbines installed when the output has gone into diminishing returns or saturation.

Furthermore, the availability of wind for energy production varies according to location, depending on the terrain, height, and other surface obstacles.¹¹⁶ Some locations are thus better suited for energy production than others since they can generate more electricity or can do so more efficiently. In this sense, poor siting of turbines could result in wasteful use of kinetic energy and, overall, in less efficient energy production.¹¹⁷ In some instances, allowing the first mover to place turbines in particular areas may mean doing just that.

The complexities described become all the more pressing due to an increasingly competitive growth in wind energy projects. Globally, according to the International Energy Agency, cumulative global installed capacity has been growing at an average rate of 24 per cent per year since 2000.¹¹⁸ In the United States, wind energy amounted to nearly 5 per cent of the total US electricity generation in 2015, whereas in comparison, in 2008, only 1.5 per cent of total US generation was provided

(2010) 28 UCLA J Envtl L & Pol’y 435 (discussing the wind as a common pool resource that could potentially be subject to the commons dilemma).

112 Hardin, *supra* note 75 at 1245.

113 *Ibid* at 15680.

114 *Ibid* at 15679.

115 The ‘Saturation Wind Power Potential’ for land only is lower than the global estimate. But, nonetheless, exhibits the same pattern (*ibid* at 15681–2).

116 Friction due to trees, rocks, valleys, or even buildings can slow the wind down. Ahrens, *supra* note 100 at 212–13.

117 See similarly Troy Rule, ‘A Downwind View of the Cathedral’ (2009) 46 San Diego L Rev 207 at 213.

118 International Energy Agency (IEA), *Wind: About Land Based Wind* (2015), online: International Energy Agency <<http://www.iea.org/topics/renewables/subtopics/wind/>>.

by wind.¹¹⁹ In Canada, wind energy accounts for roughly 4 per cent of Canada's electricity demand.¹²⁰ Moreover, this growth trend is likely to continue, which will further increase the competitive nature of kinetic energy extraction.¹²¹

B THE ACCESSIONARY TIES BETWEEN LAND AND WIND

Consider now the accessionary element of wind rights, which pertains to their inherent connection to landownership. The right to capture kinetic energy within the wind is not provided to all but, rather, to only the owners of the underlying land. Utility scale wind farms in the United States are typically built and operated by specialized developers. However, private landowners primarily own the underlying land on which the turbines are mounted.¹²² These landowners contract with developers to lease out parts of their land and the wind blowing over it for the purpose of wind energy production. These contracts are known as 'wind leases.'¹²³ Importantly, the right to enter into a wind lease is reserved solely for the owner of the land underlying the wind current.

A few states have explicitly acknowledged the practice of wind leasing through legislation. For instance, Kansas refers to any instrument that

119 US Department of Energy, Office of Energy Efficiency and Renewable Energy, 'Wind Vision: A New Era for Wind Power in the United States' (US Department of Energy, 2015) at 3 [US Department of Energy].

120 Canadian Wind Energy Association, 'Installed Capacity' (2015), online: <<http://canwea.ca/wind-energy/installed-capacity/>>.

121 On a global level, the IEA estimated that wind energy could grow from providing 2.8% global power generation in 2013, to providing 15%–18% of global wind power by 2050. IEA, *Wind: About Land Based Wind* (2015), online: <<http://www.iea.org/topics/renewables/subtopics/wind/>>. As for the United States, a recent report by the US Department of Energy analyzes scenarios under which wind energy provides 10% of the US end-use demand by 2020, 20% by 2030, and 35% by 2050. US Department of Energy, *supra* note 119.

122 According to the American Wind Energy Association, 'the majority' of wind projects in the United States are on private lands. American Wind Energy Association, *Wind 101: The Basics of Wind Energy* (2015), online: <<http://www.awea.org/Resources/Content.aspx?ItemNumber=900>>; The Wind Energy Foundation estimates 95% of wind turbines (on-shore) are installed on private lands. Wind Energy Foundation, *Interesting Wind Energy Facts* (2015), online: <<http://windenergyfoundation.org/interesting-wind-energy-facts/>>.

123 There is another recent practice that is using the term 'wind lease,' which pertains to the financing of the turbines themselves (rather than the land and wind). These contracts pertain mostly to smaller-scale turbines rather than utility-scale installations and are intended essentially to help the landowner finance the construction of a turbine that she wants to erect on her land. See e.g. United Wind, *How Does a Wind Lease Work?*, online: <<http://unitedwind.com/how-it-works/>>. For the purpose of this article, however, I use the term 'wind lease' to denote the leasing of the land and the wind above it, rather than the leasing of the turbines.

'conveys any estate or interest created by any lease or easement involving wind . . . resources and technologies to produce and generate electricity,' noting specifically that such instruments shall include, *inter alia*, '[a] description of the real property subject to . . . and a description of the real property benefitting from the wind . . . lease.'¹²⁴ Similar provisions can be found in Oregon,¹²⁵ Montana,¹²⁶ and Nebraska.¹²⁷ In most states, however, the practice of wind leasing is not formally acknowledged by legislation. Nonetheless, even without formal recognition, it appears that the leases are the underlying foundation of most wind projects on privately owned lands in the United States. Although it is difficult to determine exactly how popular such wind leases are in fact, practitioners have attested to the ubiquity of wind-leasing practices.¹²⁸

Importantly, the lease is solely for the purpose of producing wind energy.¹²⁹ Such leases typically aim to lease only the particular tracts of land necessary to place turbines and grid lines and to allow for the production of energy from the winds blowing over the land.¹³⁰ While the overall area of a utility-scale wind farm can span over hundreds of

124 Kan Stat Ann, 58–2272 (West 2005).

125 Or Rev Stat § 105.915 (1981).

126 Mont Code Ann, § 70–17–402 (West 2011).

127 Neb Rev Stat § 66–909.04 (2012).

128 To illustrate, consider the example of Texas, which is the top wind energy-producing state in the United States. American Wind Energy Association, *Texas Wind Energy*, online: <<http://awea.files.cms-plus.com/FileDownloads/pdfs/texas.pdf>>. Although Texas has not formally recognized wind leasing, practitioners report the practice of wind leasing is pervasive. Lisa Chavarria, *The Severance of Wind Rights in Texas* (2008), online: <[http://www.sbaustinlaw.com/library-papers/Chavarria-The_Severance_of_Wind_Rights%20\(Final\).pdf](http://www.sbaustinlaw.com/library-papers/Chavarria-The_Severance_of_Wind_Rights%20(Final).pdf)> at 2 [Chavarria, *Wind Rights in Texas*]; Alan J Alexander, 'Note: The Texas Wind Estate: Wind as a Natural Resource and a Several Property Interest' (2011) 44 U Mich JL Reform 429 at 440–1 [Alexander]. Interviews I conducted with practitioners and industry members for the purpose of this study have likewise confirmed the ubiquity of wind leasing (interview details on file with the author).

129 Windustry, *Wind Energy Easement and Lease Agreements* (2005), online: <<http://www.windustry.org/sites/windustry.org/files/LandEMain.pdf>> at 4 [Windustry, *Wind Energy Agreements*]; Ernest E Smith et al, *Texas Wind Law* (LexisNexis Matthew Bender, 2013) at Appendix 2 (lease and grant of easements agreement); Lisa Chavarria, *Wind Leases: Emerging Issues. The Wind Energy Institute Sponsored by the University of Texas School of Law* (2008), online: <<http://sbaustinlaw.com/library-papers/Wind%20Leases%20Emerging%20Issues.ppt>> [Chavarria].

130 Gregory S Friend, *A Tale of Two Uses: Landowner Perspectives on Wind Leasing and Transmission Easements: Wind, Solar and Renewables Fundamentals Conference, Sponsored by the University of Texas School of Law* (2010), online: <http://www.sbaustinlaw.com/library-papers/Friend_WE10_paper.pdf> at 7; Windustry, *Wind Energy Agreements*, supra note 129.

acres,¹³¹ the actual ‘footprint’ of the turbines¹³² – that is, the amount of land actually taken up by the turbines – is relatively small.¹³³ Therefore, the remaining land can be used for many other purposes, such as farming, hunting, or oil and gas exploration, and the landowners typically reserve the right to do so.¹³⁴

To protect the ability to produce energy from the wind and ensure a stream of unobstructed wind, the leases are often combined with a wind easement that grants the developer an unobstructed flow of wind over the land.¹³⁵ Alternatively, wind leases may contain a ‘no-interference’ clause, which acts in much the same way, restricting the landowners from conducting any activity that could interrupt the free flow of wind across the land.¹³⁶ Wind easements are explicitly endorsed through legislation by a few states. Oregon, for instance, provides that a ‘wind energy easement’ is ‘any easement, covenant or condition designed to insure the undisturbed flow of wind across the real property of another.’¹³⁷ Montana likewise defines an easement as ‘the right granted by the owner of real property . . . guaranteeing the developer the right to use [the underlying land] and the wind resource located on and flowing over its surface.’¹³⁸ Similar easements also exist in South Dakota,¹³⁹

131 According to a report by the US National Renewable Energy Laboratory, the average total area of 172 wind projects in the United States is 8,778.9 square kilometres (equivalent of roughly 1,977 acres). National Renewable Energy Laboratory, *Land-Use Requirements of Modern Wind Power Plants in the United States* (2009), online: <<http://www.nrel.gov/docs/fy09osti/45834.pdf>> at 10.

132 The footprint may also include services roads and service areas. National Renewable Energy Laboratory, *ibid* at 22.

133 In a study conducted by the US National Renewable Energy Laboratory, the average direct land use impact was found to be 0.3 hectares per megawatt (*ibid* at 12). Assuming a 1.5 megawatt turbine, this means 0.45 hectares per turbine.

134 See Lisa Chavarria & Rod Wetsel, *Anatomy of a Wind Energy Lease 1* (Houston, TX: State Bar of Texas, 2003); Smith et al, *supra* note 129 at s 3.02; Friend, *supra* note 130 at 8–9; Windustry, *Wind Energy Agreements*, *supra* note 129 at 7.

135 See Windustry, *Wind Energy Agreements*, *supra* note 129 at 3. Wind easements could be analogous to the traditional common law easement for light and air, in the sense that they require the owner of the property subject to the easement to keep it clear of structures or installations that would otherwise obstruct the movement of air. See e.g. Ernest E Smith & Becky H Diffen, ‘Winds of Change: The Creation of Wind Law’ (2010) 5 *Tex J Oil & Gas Energy L* 165 at 186; Smith et al, *supra* note 129 at s 4.01. For a review of analogous solar easements, see Alexandra B Klass, ‘Property Rights on the New Frontier: Climate Change, Natural Resource Development, and Renewable Energy’ (2011) 38 *Ecology LQ* 63 at 95–102 [Klass].

136 See Friend, *supra* note 130 at 8.

137 Or Rev Stat, *supra* note 125.

138 Mont Code Ann, *supra* note 126.

139 SD Codified Laws, § 43–13–16, 43–13–19 (2004 & Supp 2009).

North Dakota,¹⁴⁰ Nebraska,¹⁴¹ Kansas,¹⁴² Minnesota,¹⁴³ and Wisconsin¹⁴⁴ with slight variations.¹⁴⁵ However, just like wind leases, easements are created regardless of the formal legislative endorsement.¹⁴⁶ In any case, it is clear that wind easements are evidently defined in terms of the connection between the free-flowing wind and the real property.

Another practice, which likewise aims to secure the unobstructed flow of wind to the turbines, is known as ‘buffer leasing.’ Developers lease out adjacent lands along with wind easements as ‘buffers.’¹⁴⁷ No turbines are placed on the buffer plots. The buffer landowners are committed only to refrain from obstructing the wind.¹⁴⁸

One may argue that wind leases are in fact geared solely towards the use of land and do not address the right to extract kinetic energy from the wind as such. I would resist this characterization. First, the interest in the wind flow is often mentioned specifically, typically in the context of the wind easements acquired in conjunction with the leases or ‘no-interference’ clauses within the lease. Moreover, even if the contracts do not always explicitly frame things in terms of a ‘wind right’ (as understood by this article), it is clear from the way the practice is set up that the landowners see themselves as leasing out the right to access the wind on their land as well as to extract it. The leases are, as mentioned,

140 ND Cent Code § 17–40–02, 17–04–03 (2009).

141 Neb Rev Stat § 66–909.04 (2012).

142 Kan Stat Ann, *supra* note 124.

143 Minn Stat § 500.30 (2012).

144 Wis Stat § 700.35 (2015).

145 Note that none of the easements mentioned are prescriptive easements. See James Backman & David A Thomas, *A Practical Guide to Disputes between Adjoining Landowners — Easements* (Lexisnexis Matthew Bender, 2015) at s 17.03. See also Klass, *supra* note 135 at 102–3 (discussing the legislation of easements)).

146 As with the wind leases, although it is hard to determine to what extent wind easements are in fact created based on agreements between private parties, scholars and legal practitioners have noted that wind easements are common in areas where wind energy development is prevalent (e.g. Smith et al, *supra* note 129 at s 4.01).

147 Although it was also noted that sometimes the buffer leases are just as useful in gaining the neighbours’ cooperation with the project rather than having them actively opposing the project. Friend, *supra* note 130 at 14.

148 *Ibid*. A tiered rent system is used to compensate the landowners according to the type of use the developers make of their land (whether turbines are mounted or not) and the total amount of land area that is burdened by the project. Sometimes the buffer plots may also receive tiered royalties (*ibid*). More generally, the structure of the compensation mechanism for landowners can include a fixed fee for access and use, either per turbine, per megawatt capacity (indication of turbine size), or per acres, and a royalties component calculated based on the developer’s gross revenue or a combination of the two. *Ibid* at 9–10, 12–13; Windustry, *Wind Energy Easements and Leases: Compensation Packages* (2009), online: <<http://www.windustry.org/sites/windustry.org/files/Compensation-2009-07-06.pdf>>.

directed solely towards wind energy-producing activities and do not create a general right of access to land.

Furthermore, practically speaking, landowners today maintain authority or dominion over the extraction of kinetic energy from wind. Landowners are asserting their exclusive position over the wind through the wind leases. Since no other institution addresses or regulates the extraction itself, the landowners are the ones currently deciding if and how the wind is harvested.¹⁴⁹ They maintain, to use Larissa Katz's terminology, the supreme agenda-setting authority over the airborne kinetic energy.¹⁵⁰

Moreover, at least under current technology, one cannot use the wind unless a turbine is placed on a specific parcel of land and unless permission to use the airborne kinetic energy above that parcel is granted by the landowner. Therefore, landowners can in practice exclude people from using the wind over their land.¹⁵¹ This is true, in fact, even if a turbine is not physically placed on an underlying parcel of land. Consider again the practice of buffer leasing.¹⁵² A landowner leases out the wind blowing over her land, regardless of the turbines being placed on the ground. The buffer lease prevents others from making use of the wind in a given location. It restricts their ability to harvest the wind and, therefore, excludes them from the wind.¹⁵³

¹⁴⁹ To be clear, there are often zoning restrictions that apply to placing the turbines, their permitted height, or their distance from public infrastructure such as schools or roads. But these zoning restrictions do not address the extraction of airborne kinetic energy, as such, even though they regulate the siting of the turbines in other aspects.

¹⁵⁰ Larissa Katz, 'Exclusion and Exclusivity in Property Law' (2008) 58 UTLJ 275.

¹⁵¹ In recent years, a rich body of literature has emerged on the centrality of 'exclusion' or 'gatekeeping' in property. See e.g. Henry E Smith, 'Exclusion versus Governance: Two Strategies for Delineating Property Rights' (2002) 31 J Leg Stud S453 at S454–5; James E Penner, *The Idea of Property Law* (Oxford: Oxford University Press, 1997) at 71; Thomas W Merrill, 'Property and the Right to Exclude' (1998) 77 Neb L Rev 730 at 740; Thomas W Merrill & Henry E Smith, 'The Morality of Property' (2007) 48 Wm & Mary L Rev 1849 at 1850. See also Katrina Wyman's recent insightful analysis of the 'New Essentialism' in property scholarship, which focuses, *inter-alia*, on exclusion, re-examining the contributions of both its proponents and its critics. Wyman, 'New Essentialism,' supra note 9.

¹⁵² See notes 148–9 in this article and accompanying text.

¹⁵³ Another important clarification pertains to the question of who's right is being analyzed here. Some property scholars are concerned with the question of whether easements and other less-than-ownership forms are truly 'property.' For a review of the scholarship on this point, see e.g. James Y Stern, 'Property's Constitution' (2013) 101 Cal L Rev 227 at 299–300. The question here, however, is not whether leases or easements as such amount to property or if and to what extent the owner cedes power over a portion of her ownership when entering into a lease agreement. Rather, the question is whether the landowners' rights – the 'main' right – amounts to property; not the nature of the rights that developers' get under the lease.

The structure of the lease can naturally vary depending on the location and structure of the project. However, importantly, these leases highlight the fact that there is an implicit sense, shared by all parties involved, that the right to harvest the airborne kinetic energy is imbedded in the ownership of the land over which the wind flows. The landowners believe it is theirs to lease out and the developers believe so too. To date, to the best of my knowledge, the notion of wind leasing as such has not been challenged in the courts.¹⁵⁴ In fact, the few pieces of legislation that do endorse the practices of wind leasing and wind easements embody the same assumption.¹⁵⁵

C HYBRID ALLOCATION: TIES TO LAND AND COMPETITIVE EXTRACTION

The case of wind nicely illustrates the framework suggested above for hybrid allocations. Consider first the application of accession. The practices of wind leasing and easements tie the right to either extract airborne kinetic energy or protect the flow of wind to the ownership of the underlying land. The accessionary allocation can be understood in this case through the doctrine of ‘*ad coelum*,’ under which ownership of land extends to everything below and above the land.¹⁵⁶ In the context of

A separate question could be how landowners’ entitlements to airborne kinetic energy can be analyzed in Hohfeldian terms and, specifically, through the distinction between claim right and privilege. Wesley Newcomb Hohfeld, *Fundamental Legal Conceptions as Applied in Judicial Reasoning*, ed by Walter Wheeler Cook (Clark, NJ: Lawbook Exchange, 2010). In some sense, this question echoes the ‘is it really property’ concern. We would say a landowner has a Hohfeldian claim right over the wind if others have a duty to refrain from interfering with it. Do others have such an obligation in the case of wind? The answer, again, lies in the way one sees the connection between land and wind. Since I maintain that at least *de facto* landowners do command enough authority over the wind, I would tend to say they also command the respect of others with regard to their wind and, accordingly would see their entitlement as a claim right.

¹⁵⁴ Based on searches conducted on two electronic databases: WestLaw and LexisNexis. Practitioners have likewise noted that although in several instances contractual disputes over various issues within the wind leases have come before the courts, the validity of the wind leases themselves has not been questioned to date, either by the parties to the dispute or by the courts. See Chavarria, *Wind Leases*, supra note 129 at 2.

¹⁵⁵ Kansas, for example, notes specifically that ‘[n]o person other than the surface owner of a tract of land shall have the right to use such land for the production of wind . . . generated energy unless granted such right by the lawful owner of the surface estate by lease or easement.’ Kan Stat Ann, 58–2272(b) (West 2005).

¹⁵⁶ The full statement of the maxim is *cujus est solum, ejus est usquead coelum et ad inferos* (he who owns the soil owns also to the sky and to the depths). For a further discussion of the *ad coelum* maxim, see e.g. Henry E Smith, ‘Exclusion and Property Rules in the Law of Nuisance’ (2004) 90 Va L Rev 965 at 992; Thomas W Merrill, ‘Trespass, Nuisance, and the Costs of Determining Property Rights’ (1985) 14 J Legal Stud 13 at 16,

original ownership, the *ad coelum* maxim can be understood as an instance of accession in that the owner of the ground is entitled to own the resources in the subsurface of the land and in the air column over it.¹⁵⁷ Applying this notion to the case of wind, it would suggest that landownership includes the entitlement to the wind passing through the air column above the land.

Another accessionary principle that may be at play is riparianism.¹⁵⁸ The practice of wind leasing, for instance, can be taken to reflect a vertical analogue of the horizontal riparian regime in the sense that the owners of the abutting land are the ones entitled to use the resource.¹⁵⁹ The wind current can be seen as being analogous to a water stream flowing through several properties, which entitles the underlying landowners to use some of the resource.

Either way, both *ad coelum* and riparianism rely on land to allocate the rights, such that, whichever analogy we choose, ownership of the land is the precondition to the delineation of the wind rights by accession.

Yet once access to the wind is initially allocated to the landowners, there is then a competitive race between the landowners over the use of the airborne kinetic energy. The extraction of airborne kinetic energy, as such, is currently not legally limited.¹⁶⁰ Consider, for instance, the

n 12, 35–6; Eric R Claeys, 'On the Use and Abuse of Overflight Column Doctrine' (2013) 2 Brigham-Kanner Property Rights Conference Journal 61.

¹⁵⁷ Merrill, 'Accession,' supra note 3 at 467; similarly, Eric R Claeys, 'Exclusion and Exclusivity in Gridlock' (2011) 53 Ariz L Rev 9 at 33–4.

¹⁵⁸ Under a riparian regime, the right to use the water on the property is a natural attribute of land. David H Getches, *Water Law in a Nutshell* (Eagan, MN: West, 2009) at 16; Restatement (Second) of Torts 1979, para 843.

¹⁵⁹ To be clear, I invoke the analogy between riparian water rights and wind rights for the purpose of underscoring the important role landownership plays in both cases as a precondition for access to the resource. I stress, however, that riparianism in itself does not clearly follow the same hybrid pattern of allocation that is discussed here: riparianism does indeed have an accessionary threshold based on landownership (only riparian landowners are entitled to access adjacent or abutting waters). However, at the second step, completing the entitlement to a specific gallon of water is not done by a race to capture it but, rather, by a reasonability analysis (see e.g. at 48–9), reviewing the case law that applies the reasonable use rule. But see Schorr, supra note 98 at 22–3, 46 (maintaining that the reasonability analysis did actually embody certain principles of first possession). Therefore, to the extent that the reasonability analysis differs from first possession, riparianism exemplifies a different type of hybrid than the one discussed in this article.

¹⁶⁰ An exception to this might be a specific setback requiring that turbines should not be built within a certain distance from real property lines, which could provide a 'recovery distance' for the wind. Setbacks were adopted by Minnesota (Order Establishing General Wind Permit Standards, Docket No EG-999/M-07–1102, 7–8 (Minn Pub Util Commission, 11 January 2008) and South Dakota (9 SB 141, 84th Legis Assem, Reg Sess (SD 2009)). Similarly, although regarding public lands, the Bureau of Land

pieces of legislation that recognize wind leases. They acknowledge the prerogative of the underlying landowners to enter into a wind lease, but they do not limit the extraction of kinetic energy from the airstream. In this sense, the extraction of airborne kinetic energy is not capped and is subject to an open race. A landowner that is quick to install wind turbines will be able to utilize the airborne kinetic energy to her advantage, regardless of the implications in other directions or to the overall area.¹⁶¹ Practices such as buffer leasing or wind easements are illustrative of how the race is perceived by landowners and developers. The fact that developers feel the need to protect themselves by creating such buffers suggests that a competing wind farm could locate in proximity to them and seize their wind flow. Developers spend significant resources to ensure that this scenario will not happen.

Management (BLM) stipulates a minimum-distance setback for wind projects on BLM lands, which is meant 'to avoid potential wind turbulence interference issues with adjacent wind energy facilities.' US Bureau of Land Management, Wind Energy Development Policy, IM 2009–043 (19 December 2008). The process of applying and obtaining wind rights of way on BLM lands is currently under review. US Bureau of Land Management, 'Notice of Proposed Rulemaking; Extension Of Comment Period: Competitive Processes, Terms, and Conditions for Leasing Public Lands for Solar and Wind Energy Development and Technical Changes and Corrections,' 79 Fed Reg 59022 (30 September 2014). The setback requirements, however, were not amended by the recent rulemaking. E-mail from Ray A Brady, BLM Renewable Energy Policy Team, 23 June 2015 (on file with author).

Another question might be whether the law of nuisance applies to the use of airborne kinetic energy. To date, to the best of my knowledge, such a claim has not been recognized. Although it has been mentioned (in *Muscarello* 2012, supra note 109), where the plaintiff argued that an amendment to a county ordinance that eased the requirements for wind energy construction, deprived her, *inter alia*, of the 'full extent' of her kinetic energy (ibid at 910). Judge Posner, writing for the court, rejected the claim, finding that the ordinance – as such – had not violated the plaintiff's constitutional rights (ibid at 913–14). The court did not, however, rule out the option of future nuisance litigation against a wind project that might be constructed adjacent to plaintiff's property (ibid at 914–15). Although, the court does not address specifically the question of how a nuisance concerning airborne kinetic energy might be analyzed, and, thus, its statement might be taken to refer, more broadly, to a nuisance suit on other grounds such as, noise or flickering lights caused by the spinning turbines. Indeed, in a few other cases, nuisance claims of the latter sort have been brought forward. See e.g. *Rankin v FPL Energy LLC*, 266 SW3d 506 (Tex App 2008) (rejecting a nuisance suit filed by neighbours of a proposed wind farm that were concerned with the loss of view and noise), but see e.g. *Rose v Chaikin*, 187 NJ Super 210 (ChDiv 1982) (finding an actionable nuisance as the wind turbine on a neighbouring property had 'substantially interfere[d] with the health and comfort of plaintiffs' (ibid at 219).

¹⁶¹ This is especially true, moreover, given the 'saturation point' effect, which means that turbines installed past a certain point have a diminishing output (see notes 112–15 in this article and accompanying text).

It is interesting to think about what exactly constitutes a legitimate claim in the race. For instance, is extraction a requirement to establish an entitlement? It seems that extracting kinetic energy for the purposes of electric energy production is the main criterion for establishing an entitlement to wind.¹⁶² Although, at the same time, practices such as buffer leasing and wind easements suggest that ownership is being established in the entire wind-stream regardless of whether it is extracted.¹⁶³ It is also interesting to note that, at least at present, energy production seems to be the only activity that warrants gaining title in wind. One could imagine, for instance, an entitlement in wind that is aimed at keeping the wind flow for ecosystem purposes or recreational activities. Such could be the case, for example, with wind easements.¹⁶⁴ Although it appears that wind easements are currently only used for protecting energy-producing activities.

Either way, the competition is not open to all individuals but, rather, only to landowners. Developers cannot enter the race alone but, instead, they must contract with landowners to gain access. Landownership, and the rights allocated by virtue of owning land, act as a threshold requirement for participating in the race for wind. Tying wind to land ownership through accession serves the purpose of delineating the group of potential claimants. Landowners are in a better position to compete and, thus, will need to expend fewer resources in the competition.¹⁶⁵ This is true, *inter alia*, given their physical proximity to the wind currents. Consider, in contrast, the resources that non-landowners would have to spend to gain access to the wind.

¹⁶² The question of what amounts to ‘possession’ of wind was addressed, albeit in a slightly different context, in *Romero v Bernell*, 603 F Supp 2d 1333 (DNM 2009). In considering the partition of land owned by tenants in common and whether such partition would diminish the value of the land for future wind development, the court found that wind is ‘like water or wild animals which . . . do not belong to the fee owner until reduced to possession’ (ibid at 1335) and that ‘[t]he right to “harvest” wind energy is, then, an inchoate interest in the land which does not become “vested” until reduced to “possession” by employing it for a useful purpose’ (ibid). Since at the time no wind project had been constructed on the land in question, the court found that the wind interest had not yet materialized, and ordered the partition of the property (ibid at 1335–6).

¹⁶³ See Part IV.B.1 in this article (discussing buffer leasing and wind easements).

¹⁶⁴ Such a hypothetical ‘wind conservation easement’ could be analogous to conservation easements used in other contexts and might be useful for those seeking, for instance, to protect bird populations or seed pollination.

¹⁶⁵ Or lease out their right to compete, as in the case of wind leasing where landowners lease out their right to compete to developers.

The group of landowners is also a smaller community that can more easily engage in cooperative behaviour.¹⁶⁶ ‘Community wind’ projects that have sprung up in several locations are illustrative. These projects pool resources from several private parties in close geographical proximity to create mid-sized wind projects that benefit the local community.¹⁶⁷ This allows the wind facilities to benefit from economies of scale that would not have been available to each individual owner.¹⁶⁸ These projects also benefit from the fact that they are often sited closer to residential areas, which is more efficient in terms of electricity transmission costs.¹⁶⁹

Narrowing the pool of claimants through accession also serves to increase the stakes of each landowner in the wind, which may increase their incentives to obtain an optimal extraction rate or optimize the extraction locations. As mentioned, the efficiency of wind energy production varies by location since some locations are more suited than others for such production.¹⁷⁰ In the context of the race over airborne kinetic energy, a senior user may be able to block the siting of turbines on a junior’s plot of land. The siting of wind projects is thus based on seniority rather than on the relative efficiency of the locations.¹⁷¹ Optimizing the rate of extraction is also key given the ‘saturation point’ phenomenon that, as mentioned, means that at a certain point adding more turbines will not necessarily increase energy output.¹⁷² In this sense, the race can lead to suboptimal siting and use of wind energy facilities, whereas limiting the pool of claimants can mitigate this by increasing each participants’ incentives to optimize wind extraction.

At the same time, however, assigning wind rights to landowners through accession is not enough in the sense that it does not define the full extent of the right. Wind is a fluid and migratory resource that travels through several tracts of land. All landowners therefore establish the same type of

166 As mentioned, this can follow from Robert Ellickson’s famous discussion regarding the increased ability of smaller groups to engage in cooperative behaviour and address medium-scale events that affect a few of them. Ellickson, *Order without Law*, supra note 78; Ellickson, ‘Property in Land,’ supra note 78.

167 For a review of the growing trend of community wind, see generally Hannah J Wiseman & Sara C Bronin, ‘Community-Scale Renewable Energy’ (2013) 4 *San Diego J Climate & Energy* L 165 [Wiseman & Bronin]; American Wind Energy Association, *Community Wind Projects Database*, online: <<http://www.awea.org/Issues/Content.aspx?ItemNumber=5323>>.

168 Wiseman & Bronin, supra note 167 at 166.

169 Ibid.

170 See supra notes 117–118 in this article and accompanying text.

171 See similarly Alexander, ‘Texas Wind Estate,’ supra note 128 at 437–8.

172 See supra notes 112–15 in this article and accompanying text (discussing the saturation point phenomenon).

connection to the wind current. And, thus, simply entitling a landowner to capture the wind flowing over her land does not tell us what obligations the landowner may hold towards her neighbours (must she account for the impact of extracting wind on her neighbours?) and, relatedly, how much wind can she capture or for how long can she do so. Adding a rule of first possession here can be helpful if it is set up to define either who among the group of landowners gets priority over the extraction of wind or how much each landowner is entitled to use. Thus, first possession complements accessionary allocation by determining the scope of the claimants' rights to wind.

V Conclusion

At the unique moment of initial allocation, a hybrid rule is often at play. We begin with accession, which acts to delineate the group of potential claimants by virtue of owning an existing asset. The existing asset thus acts as a precondition for entering the group of potential claimants. Then, at the second stage, a competitive race takes place among the defined claimants to determine who among them gets the prize of ownership as well as how much each one can take.

The hybrid pattern of acquisition is explained by the ability of each rule to mitigate some of the other's shortcomings. By limiting the participants in the race, the dissipation of resources spent in the effort to achieve the prize of ownership is limited as well. Restricting the number of potential claimants also increases the chances of productive cooperative behaviour among the claimants and increases each claimant's stake in the resource, which serves to decrease their incentive to over-exploit it. At the same time, when multiple claimants establish the same type of connection to the resource, such as, for example, when multiple landowners overlie the same aquifer or underlie the same wind current, accession alone does not produce a unique solution. In such instances, it does not determine who among them can use the resource and how much each one is allowed to use or for how long. First possession can be more helpful in this sense since it embodies an inherent requirement to possess, which is often defined in terms of quantity ('how much?') or time ('for how long does the right hold?').

Recognizing the hybrid pattern could also be relevant to the normative assessment of the rules of allocation. Understanding that first possession and accession are often coupled might require a more nuanced description of the normative advantages of first possession as being not truly open to all but, rather, to only those within the accessionary circle. At the same time, if one sees accession as assigning 'new' increments to

existing landowners, then coupling it with first possession may help by introducing a more egalitarian element.

Lastly, these insights regarding hybrid rules of allocation might relate more broadly to other open questions in property scholarship. One may wonder, for instance, what really is 'original' ownership? When is an allocation of things or increments of value called for?¹⁷³ This article takes as a starting point that the question of allocation has arisen and that an inquiry into original allocation is warranted. But the next step perhaps may be unbundling the question of 'originality' in the sense of determining when original ownership is in fact called for.

Another open question pertains to other possible hybrid combinations. This article challenges the dominance of 'pure' modes of allocation by introducing the alternative of hybrid combinations into the discourse. It focuses on the specific hybrid between accession and first possession, although there might be other interesting combination rules that are not explored here. The basic insight that hybrid combinations are often at play, rather than pure forms of allocation, could be usefully applied in other contexts as well.

In any case, understanding the hybrid between accession and first possession is significant at this point given its prevalence. And the discussion of the initial modes of allocation should account for this more nuanced reality. Moreover, policy makers are likely to face challenges with respect to the ownership of new resources, whether it be novel sources of energy such as wind or shale gas or newly invented intangibles. Gaining a richer understanding of the way acquisition in these assets takes place may assist in better tackling these challenges or provide another useful policy alternative to consider.

¹⁷³ This is perhaps the concern that is driving Newman and Smith's approaches (see *supra* notes 36–43, 80–4 in this article and accompanying text).