Simplification is complicated: property, nature, and the rivers of law

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Received 20 June 2007; in revised form 21 December 2007

Abstract. A number of scholars have criticized the ways in which property law simplifies nature. Such reductive simplifications are seen as being reliant upon a claim to mastery and dominion that is belied by the essential complexity and dynamism of the natural world. Drawing from a close reading of a property-boundary dispute involving the historical movements of the Missouri River, I supplement this account by revealing the ways in which legal simplification is itself complicated: that is, both dependent on considerable amounts of practical work, and subject to breakdown, ambiguity, and contradiction. Rather than a singular river, made legible through the unfolding of a unitary legal logic, I reveal several conflicting 'rivers' produced through property law. I conclude by trying to make sense of property as a set of practices that serve to produce the 'effect' of property. These practices, while often messy and contradictory, are, nevertheless, significant in the installation of property as a powerful organizing device through which the social world is made meaningful.

“A river is commonly thought of as a large stream of fresh water flowing from one point to another. As may be expected, the legal components of the abstraction—river—are more complicated. Valuable property rights emanate from each component, and it is important to distinguish carefully among the water, the bed, and the banks.”

Massari (1973, page 370)

“[L]and is relatively easy to turn into property. Land stands still.”

Rose (1998, page 136)

Introduction
Nature enters property in several ways. For example, nature is often an object of ownership. Nature may also be placed outside property, as the state prior to law and the social contract. My concern here, however, is when nature is enlisted as a boundary marker. Frequently, natural features, such as trees, the edges of lakes, the foreshore of the ocean, or the thalweg of a river, are used as boundaries between property owners. This would seem reasonable as such features are usually prominent and obvious. As the US Supreme Court put it in 1892, “Nothing is more natural than to take a river as a boundary” [Nebraska v. Iowa, 143 U.S. 359 (1892) at 366].

Boundary work, in general, is a central practice of property (Cooper, 2007). Identifying, negotiating, and stabilizing a diverse array of boundaries is a central preoccupation. Such boundaries are metaphorical, dividing spheres (such as private and public domains, or the divide between meum et teum), or carving off objects and subjects differentially subject to the reach of property, such as persons, who cannot be owned, or wild animals (ferae naturae) that can be owned by whoever subjugates them. Boundaries may also be very practical and real, such as fences or walls. Often, of course, they are both, such as the domestic ‘curtilage’, the area surrounding a dwelling in which a person has a reasonable expectation of privacy. The curtilage relies upon the identification of a conceptual divide between a public and a private realm, but is also materialized and made legible through the arrangement of everyday objects, such as
fences, lawns, and gazebos (Blomley, 2005a). The geographic dimensions and effects of such boundary work are a concern of many legal geographers (Blomley et al, 2001). Property disputes, such as the one at the centre of this account, complicate such boundaries. Western conceptions of property suppose that for every parcel of land, a singular and determinate owner can be identified, clearly distinguished from others by boundaries that distinguish his or her property interest from other owners, nonowners, or the state (Blomley, 2004; Nedelsky, 1990; Singer, 2000). Given the presumption that “all land should have an owner” [Banks v. Ogden (1864) 69 U.S. (2 Wall.) 57, 67], the solution to the situation in which two or more owners claim the same parcel of land is to identify and reinscribe a boundary separating the two estates.

In drawing those boundaries, categories must be identified and stabilized. Categorical logics, it has been noted, are central to law more generally. Categories can be constructed and distinguished in various ways (Lakoff, 1987). As Hamilton (2002) notes, we might build the category ‘bird’ according to degrees of ‘birdness’, identifying the ideal type at the core of the category, and then shading off into more or less representative examples (ostriches? bats?). Boundaries between such categories, consequently, are fuzzy. Categorization turns less on the forcing of distinctions and more on clustering and overlap. Western law, conversely, relies upon an ‘a/not a’ mode of categorization, reliant on a binary logic wherein the integrity and categorical stability of one category is predicated on its separation from another (Blomley, 2005b; Varley, 2002). Such a categorical logic turns the “merely different into the absolutely other”, forcing “difference into dichotomous hierarchical oppositions” (Young, 1990, page 99). Thus, sparrows are birds; bats are not. Similarly, property law entails the assignation of objects, people, and relationships to supposedly discrete and stable categories. One central distinction, for example, is that made between private and public property. One of the crucial axes of liberal legalism, this ‘great dichotomy’ (Bobbio, 1989) forces a binary divide between what may be in reality diverse and entangled forms of ownership (Blomley, 2005b). Thus, there may be many owners of land, “but, for practical purposes, .... only two classes of ownership” (Geisler, 2000, page 65).

The production of such categorical spaces requires that the things of property be rendered legible. Legibility, it should be noted, has a special relationship to law. The word ‘legible’ derives from the French ‘legeré’ (to read). ‘Legere’ has an association with the Latin ‘lex’, the etymological basis for ‘law’. However, the association is more than coincidental. Law is centrally concerned with two acts: inscription—the practice of naming and marking—and reading—that is, the determining of the meaning (see also Hibbitts, 1994). Law, like other forms of state action, entails particular ways of seeing. As we shall see, to the extent that nature enters property, it too is subjected to a categorical logic. Take water, for example: a wealth of case law concerns its parsing by law, such as the drawing of a distinction between ‘creek’ and ‘river’ [Yukon Gold v. Boyle Concession 27 DLR 772 (1916)]; the definition of the boundary between a river and native reserve in relation to the location of the midpoint of the river [R. v. Lewis 1989 8 W.C.B. (2d) 208]; the determination of whether the boundary between two Australian states is fixed to the watercourse or includes the banks (Hazlett v. Presnell 1982, VR 137, Ward v. R 29 ALR 175 1980); whether the doctrine of accretion applies to subsurface mineral estates (Kimball, 1986); the distinction between sandbars and islands [White v. J H Hamlen and Son Co, 1 S.W.3d 464 (Ark Ct App 1999)]; the designation of a river as ‘navigable’ for the purposes of casino development (Stone et al, 1995); the designation of the ‘mean high-water mark’ in relation to public beach access (Kalo, 2000); or the definition of the ‘batture’ (alluvial accretions annually covered by ‘ordinary high water’ along the rivers of Louisiana) (Lovett, 1994; see also Verdery, 1996).
Yet such enrollments of nature have come under considerable criticism. Not only is the ownership of nature seen as destructive and dangerously anthropocentric, but also the imposition of a property grid upon the earth is condemned as reductive and simplifying. For Large (1973): “one parcel of land is inextricably intertwined with other parcels... [C]auses and effects flow across artificially imposed divisions in the land without regard for legal boundaries. The land simply cannot be neatly divided into mine and yours” (page 1045). Borrows (1997) writes of the way in which the common law imposes a “conceptual grid over both place and time which divides, parcels, registers and bounds people and places” (page 430) in ways destructive to environmental integrity and indigenous knowledge.

Steinberg, in particular, is a critic of property law, seeing it as “another tool for imposing order on the chaos of nature” (1995, page 8). In his book *Slide Mountain: Or the Folly of Owning Nature*, he notes that property law serves to reduce the complexity and mobility of nature into a “giant legal abstraction” (page 10). Property law, he argues, is “the voice of reason that we use to tidy up the messy and dynamic world of nature” (page 50). He sees it as a naïve form of reduction, reliant upon a presumptive claim to the mastery of nature. Similarly, Scott (1998) characterizes the grid of law as a form of simplification designed to make phenomena (including nature) more legible and hence controllable, given that human interactions with nature are bureaucratically indigestible in their raw form. This entails the production of ‘abridged maps’, bureaucratic grids that can be serially imposed upon social and natural realities.

The process of legal simplification, I have suggested, entails boundary drawing that relies upon a categorical logic. Through this, reality can be made legible and actionable. But simplification, Scott (1998) argues, is never fully successful, but entails slippages and ambiguity. Steinberg (1995) regards attempts to fix, enlist, and control nature as absurd. For both Scott and Steinberg the problem is largely external: the objects of simplification prove undisciplined or nonreductive. This paper, by contrast, considers the process of simplification from the inside, with a particular emphasis upon nature as boundary. I offer a close reading of the Blackbird Bend case, which concerns the movements of the Missouri River and its effects upon property boundaries, as a case study in legal simplification. While the court did simplify, in Scott and Steinberg’s terms, my argument is that this entailed much more than the simple imposition of a pregiven grid upon nature. I hope to reveal that simplification was complicated, by which I mean, firstly, that it was not easily achieved, but entailed a considerable amount of effort and work, within which simplifications frequently bumped into each other; and secondly, that this work, while reductive, was far from coherent. Attempts to render the river legible frequently foundered, or ran into different ways of seeing that produced different, and sometimes opposing rivers. As we shall see, some legal agents proffered the simplified river, rendered legible, and determinate. This nomothetic sensibility, however, bumped up against an idiographic river—the Missouri itself—whose specificity rendered common-law abstractions laughably ill suited. For others, however, the river was muddy: vague and even potentially illegible. Due to the central role of expert witnesses, a scientific river was also in evidence. Portrayed in maps and historical data, the scientific river was legible, but in ways that differed from judicial ‘ways of seeing’. Simplification, in other words, took multiple forms which overlapped, but also conflicted.

In what follows I introduce the details of the dispute, before identifying the distinctive and often conflicting ways in which the river was understood by legal actors in the case, before concluding with some general suggestions concerning property as a set of practices that serve to produce the ‘effect’ of property. These practices, while often messy and contradictory are, nevertheless, significant in the
installation of property as a powerful organizing device through which the social world is made meaningful.

The simplified river

An 1854 treaty established the reservation of the Omaha Indian Tribe on the west bank of the Missouri River in the then Territory of Nebraska. At the time when the Omaha Indian Reservation was established, it included some 2900 acres of land within a meander lobe bounded by the thalweg of the river, at Blackbird Bend (figure 1).

By 1923 the river had moved more than two miles west of the original boundary line. A white man named Joseph Kirk took control of this land in the 1920s, laying claim to it under Iowa’s squatters’ rights law, securing title by 1929. By 1948 he had made the first conveyance of the land. By 1973 nine white people, two corporations, and the State of Iowa could trace their titles to Kirk. The river was stabilized, and the land was cleared of trees, leveled, fenced, drained, and cultivated, becoming valuable and productive farmland (one farmer paid $1.6 million for the purchase of 2180 acres in 1972, for example).

On 3 April 1973, a band of twenty Omahas lead by Eddie Cline (re)occupied Blackbird Bend, claiming it as reservation land under the terms of the 1854 treaty. Following a subsequent occupation in 1975, a court granted a preliminary injunction permitting temporary occupancy of the land by the tribe until the matter was resolved.
The dispute over Blackbird Bend, no doubt, entailed many issues, including history, culture, identity, money, and racism. The court, however, framed it as a dispute over property. Resolution required boundary making. A boundary had to be drawn between landowners. To do this, the court relied upon a conceptual boundary between two categories of river movement: avulsion and accretion. The boundary drawing between avulsion and accretion required, in turn, the production, fixing, and bounding of data—soil, water, mud, islands, rivers, currents, sandbars, trees, and so on. Many other boundaries were drawn in the process (between ‘Indians’ and ‘white men’, ‘men’ and ‘corporations’, and state and federal law, for example).

But it was the distinction between avulsion and accretion that was central to the case. Avulsion and accretion are ancient legal terms of art, derived from Roman law. They work well in the world of law. They are determinate, equitable, and reasonable. The rule of accretion holds that when soil accumulates gradually and imperceptibly along a riverbank it becomes the property of the adjoining owner—property boundaries shift outwards with the addition of new land. This ensures that owners of land bounded by water will continue to enjoy water access, and awards accretions to the owners of abutting land, who are better situated to use the land productively. What happens if you lose land through erosion? If the land erodes slowly and imperceptibly, there is no legal remedy. However, if such a change happens suddenly through a shift in the river channel, through ‘avulsion’, you retain ownership of the land. Essentially, although the river may move, the legal boundary remains unchanged. This is justified by the need to ensure that owners feel secure in their entitlements. For the tribe, who launched its own claim to Blackbird Bend and several thousand additional disputed acres, and the federal government, who acted for the tribe, Blackbird Bend was severed through a series of avulsive floods, and thus was still reservation land. The white owners countered by claiming that Blackbird Bend, much of which they characterized as originally a low, sandy point, was completely destroyed and washed down by the river and replaced by new land, which accreted to the Iowa bank. In time, this become stable land, and was added to the Iowa riparian land.

Accretion and avulsion are, of necessity, categorically distinct and mutually exclusive. Thus, “the two major processes by which a river alters its meander are accretion and avulsion” confidently asserts one commentary on the Blackbird Bend case (Camp, 1977, page 815). “Avulsion is opposite to accretion”, pronounces a primer on property boundaries (Brown et al, 1986, page 199). For the critics, however, they appear as an obvious example of simplification. For Steinberg, who draws upon Blackbend Bend in support of his thesis, “Accretion and avulsion are static legal categories... [T]hey are neat and ideal stories that the law tells about the natural world. Yet neither story, of course, can remotely capture all the complexities of river movement on the Great Plains. Neither is nuanced or sophisticated enough to render legible and clear the dynamic world of nature. Neither has the precision or power for reading a natural world that is messy and unable at times to be read” (1995, page 38). However, at least initially, this does not deter the court. The District Court Judge, Bogue, J., when he first heard the case in 1977, read the Missouri as an abstract river that is both legible and determinate. (1) While it may move, and impinge on property boundaries, it does so in an ordered and legible way: accretion can indeed be distinguished from avulsion. Footnotes in his judgment distinguish the two, and then identify other discernable features and discrete processes that assist in categorizing river movement as one or the other. Ultimately, the river is rendered legible and, as a result, title was awarded to the nonnative claimants.

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(1) Omaha Indian Tribe, Treaty of 1854, Etc. v. Wilson, 575 F.2d 620 (8th Cir. 1978)—hereinafter ‘Omaha I’.  

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That said, closer reflection reveals that, despite the assured tone of the decision, this was far from a straightforward accomplishment. Here, and elsewhere, simplification was hard work:

(a) Firstly, the court had to reconstruct an historical geography of the river. As Bogue notes:

“The events which the Court is obliged to reconstruct occurred long ago and they were events of nature: so far as we know these events were not observed in their entirety by any person who could today be a witness concerning them” (Omaha I, page 89). Thus, the court has to rely upon secondary evidence, such as maps, as well as scientific extrapolations, in order to reconstruct the movements of the river through a series of temporal snapshots. This proved challenging: the initial trial lasted over a month; the trial record constituted over 3000 pages, and included over 150 exhibits. This, not surprisingly, produces a dense and often impenetrable decision, accompanied by complex diagrams (figure 2).

![Figure 2. The (il)legible river? Plate 4 from U.S. v Wilson, 523 F. Supp. 874 (1981), 885. Reproduced with the permission of Thomson West.](image-url)
(b) Secondly, simplification was adversarial. Precisely because property generates conflict, legibility had to be negotiated and produced through a combative, high-stakes trial. The disputants struggled and fought over the river. What could be discerned? What did it mean? Sand bars, islands, and cottonwood trees became battlegrounds, rather than obvious data. Expert witnesses disagreed with one another. Maps did not necessarily provide secure windows into nature, but said different things, and were themselves challenged as inaccurate and partial.

(c) Thirdly, legibility was often further complicated by other forms of legal simplification. The Blackbird Bend dispute itself became parsed into a series of legal chunks on the basis of other simplifications, each of which had to be tried (and then often appealed) separately. Thus, the courts severed part of the Blackbird Bend dispute (which was itself a consolidation of three lawsuits) from other claims to land made by the Omaha, treating the former as an ‘equitable quiet title’ action, as opposed to actions for ‘ejectment’.(2) Further, the tribe’s dispute with the state of Iowa, which claimed land in the disputed area, was severed on the basis that Nebraska law had to be applied in the evaluation of the changes. This was because the land would have been deemed part of Nebraska at the time of the river movement, even if it was now in Iowa. Over fifteen years the case bounced between the District Court and Court of Appeals six times, with the US Supreme Court hearing it twice (see box 1). Lawyers for both parties also argued, of necessity, from within preexistent simplifications. Simplification, moreover, became layered, bootstrapping itself upon other simplifications. Simplification did not always resolve a dispute—frequently, it was itself at issue. ‘No’, lawyers for the plaintiffs argued, ‘you can’t use that simplification, you must use this one’. If property law is a simplification machine, in other words, it is far from an efficient one.

To return to the District Court: the more immediate challenge was that the “events of nature”, as Bogue put it, did not fit neatly into the avulsion/accretion simplification box. Blackbird Bend did not appear to have been neatly severed, creating an oxbow cutoff. Rather, the channel appeared to have moved in several directions, moving

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**Box 1. Full case citation**

Omaha Indian Tribe, Treaty of 1854, Etc. v. Wilson, 575 F.2d 620 (8th Cir. 1978) (Tribe has presumptive right of possession and title to land within original reservation survey against all defendants), vacated by 442 U.S. 653 (1979) (Omaha I); Omaha Indian Tribe, Etc. v. Wilson, 614 F.2d 1153 (8th Cir.) (upholding Tribe’s presumptive right of possession and title to land within original reservation except as to claim against State of Iowa and severing claims of Tribe against State of Iowa), cert. denied, 449 U.S. 825, 66 L. Ed. 2d 28, 101 S. Ct. 87 (1980) (Omaha II); United States v. Wilson, 707 F.2d 304 (8th Cir. 1982) (Tribe does not have presumptive right of possession and title to trust lands in suit against State of Iowa nor does it have presumption of possession and title in nontrust lands), cert. denied, 490 U.S. 1025, 79 L. Ed. 2d 684, 104 S. Ct. 1281 (1984) (Omaha III); Omaha Indian Tribe v. Jackson, 854 F.2d 1089 (8th Cir. 1988) (upholding prejudgment interest against government and allowing government to use escrowed funds to reimburse private landowners for improvements to trust lands), cert. denied, 490 U.S. 1090, 104 L. Ed. 2d 986, 109 S. Ct. 2429 (1989) (Omaha IV); United States v. Wilson, 926 F.2d 725 (8th Cir. 1991) (per curiam) (government must pay simple prejudgment interest and liability for postjudgment interest which began on date General Accounting Office received copy of district court’s judgment) (Omaha V); and Omaha Indian Tribe v. Tract I—Blackbird Bend Area, 933 F.2d 1462 (8th Cir.) (per curiam) (dismissing Tribe’s quiet title suit in nontrust lands as a discovery sanction), cert. denied sub nom. Omaha Indian Tribe v. Agricultural & Indus. Inv. Co., 502 U.S. 942, 116 L. Ed. 2d 331, 112 S. Ct. 379 (1991) (Omaha VI).

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(2) A ‘quiet title’ action seeks to establish ownership in the face of competing claims, whereas an action for ejectment seeks to recover property.
eastwards, and then northeast, before shifting south by 1923. Tellingly, Bogue allows himself a moment of doubt:

“In the process of pulling together the extensive and complicated evidence presented in this case, it becomes apparent that the movements of the Missouri River have not been so clean and precise that they easily fall into the legal categories conveyed by the terms ‘accretion’ and ‘avulsion’” (Omaha I, page 89).

But he quickly confirms that the job can be done and returns us to the simplified river. For Bogue, his task is to reconstruct the shifts of the river in relation to the categories of law:

“there is at the core of this litigation a sharp dispute as to the legal classification of certain river movements which the evidence reveals.... This Court believes that a discussion of this problem of fitting the evidence into legal categories can make this Court’s opinion more comprehensible.... Fact-finding must be, therefore, the creation of a synthesis of the fragments of data that pertain to the natural history of the Missouri River in the Blackbird Bend area” (Omaha I, pages 73, 74, my emphasis).

To ‘fit the evidence into legal categories’ requires that the evidence be made legible. Bogue does so by simplifying a simplification, adopting a particular interpretation of avulsion. Avulsion can only be identified if, after a shift in the river channel, land can be found which

“remains identifiable as land which existed before the change of the channel and which never became a part of the river bed.... [A] new bed is formed in such a manner so as not to destroy the integrity and identity of the land between the old and the new channels” (Omaha I, page 73, my emphasis).

In other words, Bogue must be able to discern unmodified chunks of reservation land in order to find that avulsion had occurred.

Unfortunately for the tribe, it proved hard to find land that retained its requisite ‘integrity and identity’. However, it proved very easy to show that the lobe had been significantly modified by the actions of the river, even becoming, to an extent, river itself. One crucial piece of evidence was a map from 1879. The existence and status of a series of river bars (A – D in figure 3) shown on this map was seen by the court as evidence that the river had completely eroded the meander lobe. The bars were simply fluvial deposits, rather than ‘land-in-place’, Bogue determined. The reservation land had been fully eroded and had simply become river.

Figure 3. Bars A, B, C, and D (adapted from U.S. v Wilson, 523 F. supp. 874 (1981)).
The tribe and the government argued, conversely, that the river had shifted in a series of sudden (and hence, avulsive) movements, and thus the land was still theirs. However, this did not necessarily leave land in place in the way the court (which accepted the argument made by the defendants) had embraced. The court was dismissive of this view. This, the court reasoned, was a departure not only from common law. It also created a definition that was, in our terms, 'illegible':

“The government would have us recognize avulsions in a variety of river movements that leave no commonly accepted indicia of an avulsion, particularly land in place and an abandoned channel” (Omaha I, page 91).

It would be impossible to discern, from the arrangement of things, whether an avulsion or an accretion had occurred. This was deeply troubling for,

“if the indicia of avulsion are cast aside, then the distinction between accretion and avulsion will become virtually meaningless.... [M]any river movements historically known as accretions would be thrown over into the category of avulsions” (Omaha I, page 90).

The simplified river demands that such distinctions be clearly maintained and rendered visible. This view of an avulsion “cannot be reconciled with the common law” (Omaha I, page 90). After finding that the river had completely destroyed the reservation land, Bogue went on to rule that the disputed land had formed through accretion, and was thus the property of the white defendants.

The muddy river
Bogue's simplifications, predictably, were not the final word. In 1978 the Court of Appeals reversed the decision of the lower District Court, and quieted title to most of the land in the Omaha. (3) While this provided some judicial certainty (confirmed after the US Supreme Court upheld the decision), the river itself became opaque and legally muddy in the process. This, in turn, rested on another boundary drawing of the court—this time, between ‘Indian' and ‘white person'. Section 194 of the United States Code states that in all trials concerning property rights involving an Indian and a white person, the burden of proof shall rest upon the white person “whenever the Indian shall make out a presumption of title in himself from the fact of previous possession or ownership.” In other words, rather than weighing avulsion against accretion, the nonnative disputants were required to prove their case that the river had moved through accretion. The court concluded that they failed to meet the burden of proof.

Section 194 constitutes, perhaps, a simplification of the entanglements of colonial relationships. However, one consequence was that the court could move away from the binary purities of the simplified river, in which complex river movements must be categorized as either avulsion or accretion. We enter a far muddier river. Clarity and bright lines dissolve into muddle and overlap. Avulsion and accretion, most immediately, are said to be hard (perhaps impossible) to disentangle. Most immediately, the court treats them as dynamically interrelated:

“Undisputed historical data relating to the early movements of the Missouri River make clear that the wild and uncontrolled movements of the river did not occur with mathematical precision or follow predictable paths. In fact, as the voluminous testimony and documentary evidence presented by both sides reveal, accretion and avulsion are interrelated phenomena often occurring together and in fact often acting as the motivating force for each other. Erosion and accretion, for example, may change the angle at which a river attacks a downstream bank, increasing the

likelihood of an avulsive cut-through. Erosion may narrow the neck of a meander bend producing the necessary conditions for an ox-bow cut-off. Or, as the government asserts, an avulsion can produce river characteristics such as low river current energy areas which are favorable to rapid deposition” (Omaha II, page 639).

Further, the court, in rejecting Bogue’s definition of avulsion, with its focus on ‘identifiable land in place’, renders the categories harder to discern. Bogue had failed to find a chunk of unmodified land that could be identified as reservation. Bogue had characterized the various bars (A–D) as mud, not land; thus, they were deemed accretive deposits generated as the river gradually eroded the reservation land. The Appeals Court, however, cite numerous other decisions that deem a change avulsive even when land was submerged in the process:

“although evidence of identifiable land in place may have some probative value that erosion has not occurred, the fact that intervening land may not be visible at the time a sudden flood or freshet occurs is not conclusive in itself” (Omaha II, page 639).

Other judicial simplifications thus prove the undoing of Bogue’s legible index.

The court then demolishes Bogue’s simplifications, arguing that the very boundaries between river and land, so central to his ruling, were particularly unstable during the period when the river moved (the width of the river increasing from 800 feet in 1875 to 10,000 feet in 1879, for example). The map produced in 1879, relied upon by Bogue in his evaluation of bars A–D, was produced when the river was in flood, they note, thus obscuring the underlying features of the river. The Appeals Court thus blurs the boundary between land and water, so central to Bogue’s simplification. The significance of the bars is also questioned. Rather than first destroying reservation land, and then subsequently producing the bars as deposits, the actions of the river, insists the Appeals Court, are unclear and the evidence uncertain. The bars could be recent deposits, or they could be part of the original meander lobe, characterized by the original surveyor as ‘a low sandy point, subject to frequent inundations’ that the river had severed through avulsion. Bogue had also found that bar C could not be land-in-place as, if it had existed prior to 1879, it would have supported cottonwood trees that were found to be lacking on maps from the period. “Although it is entirely possible that the land represented by bar C may have been completely eroded, it is entirely speculative to say that that is what occurred”, argued the Appeals Court (Omaha II, page 641). The original survey notes describe Blackbird Bend as having “almost no vegetation upon it” (Omaha II, note 42). Moreover, testimony showed that cottonwoods do not thrive in areas subject to frequent flooding, as appeared to have occurred in the area. The parallel positioning of bars A–D, although perhaps a result of accretion, could also have resulted from “the accretion which followed as an effect of avulsion” (Omaha II, page 644). As a result, the court finds the evidence for accretion and the erosion of reservation land to be conjectural, inconclusive and insubstantial.

A series of remnant channels (or ‘Iowa chutes’), deemed by the trial court to be evidence of accretion, were said by the Appeals Court to be just as easily formed by an avulsion. Kennedy, the defendants’ expert, testified that these were sites for deposition due to the low energy level of the river. For the trial court, this was evidence of progressive scour and deposition. However, the Appeals Court argues that deposition, forming the remnant channel, could “be the effect of the low energy in the area brought about by the sudden avulsive shift of the thalweg rather than a consequence of accretion” (Omaha II, page 644). In the end, none of the explanations for the remnant channels is deemed conclusive, being ‘sheer conjecture’ or an ‘educated guess’.
This court is not alone in finding the Missouri to be muddy. In *Conkey v. Knudsen* [141 Neb. 517, 4 N.W. 2d 290 (1942)], the Supreme Court of Iowa discerned avulsion in 1942, but then reversed itself in 1943 with a determination of accretion. One can sympathize with the US Supreme Court Justice who characterized the task of determining property boundaries at the water–land interface as ‘an unjudicial job’ (*Louisiana Boundary Case* (1968) 394 U.S. 11, page 85, quoted by Flushman, 2002, page xvii).

Even proponents of the simplified river find themselves confused and adrift. Bruce Flushman (2002) offers a primer on water boundaries in which he confidently promises to ‘demystify’ the question, promising cardinal rules that will prevent confusion in the area. The promised clarity evaporates, however, when he reviews the three leading US Supreme Court cases concerning the Missouri River, noting that their findings are contradictory; “there are no cut-and-dried results when it comes to answering the accretion/avulsion question”, he is forced to conclude (page 260). Flushman tries gamely to dodge the indeterminacy bullet by characterizing the judgments as representing what he grandly terms the “flexible approach” premised on pragmatism and equity: “past precedent will be given due regard, so long as the precedent and the specific physical process concerned on the property boundary dispute can be massaged to fit one another to attain the desired result” (page 262).

**The scientific river**

Bogue acknowledged the difficult categorical task he sets himself in imposing a property grid:

“Holding up the concepts of accretion and avulsion and matching these concepts with our reconstructed view of former river movements is no easy task. The task requires intense analysis and very precise conceptual thinking” (Omaha I, page 89).

Here science enters the fray. Maps, in particular, are central to the case. As a window of science, the map promises legibility and accuracy. For Scott (1998), simplification is a sort of ‘abridged map’. Not surprisingly, maps were frequently cited by the courts both as evidence and as illustration. Yet maps prove inconsistent and also often illegible. The adversarial nature of legal simplification prompted disputants to challenge opposing maps, occasionally alleging their deliberate doctoring.

The courts also relied heavily on the testimony of expert witnesses for both sides in the dispute. Surely science can provide the requisite certainty? Flushman (2002, page 247) urges the use of “well-qualified expert consultants” in such cases: their role in “understanding the physical processes that cause or evidence a certain type of river movement will provide the solid basis upon which to apply the legal principles of river boundary movement.” Yet such experts do not, it seems, provide such a ‘solid basis’: providing conflicting, contradictory, and inconclusive evidence. In part, of course, this is a product of an adversarial process. Both parties wheel out their own experts who, of course, provide conflicting science. Bogue is compelled to make a distinction between the experts, relying on their scientific stature. Thus, the testimonies of Halberg and Kennedy are said to be more persuasive:

“Both are highly qualified, both educationally and by experience in their field and with the Missouri River. Their testimony is more clear and convincing to the Court and the most probable in the light of reason, common experience and the other evidence in the case” (Omaha I, page 79).

Conversely, on appeal, where certainty is not necessary, the disagreement among experts is noted as proving the point that any interpretation of the river is only “an educated guess” (Omaha II, page 648). Yet, elsewhere, lay observers, rather than credentialed experts, are seen as more reliable. Thus Bogue relies heavily upon the
recollections of observers Willey and Prichard (who later became a judge) as disinterested and reliable (Omaha I, page 84). Yet letters written by Omaha Tribe members in the early 20th century, complaining at the ‘washing away’ of their allotment lands on the reservation, are dismissed by the government and tribe as the description of nonprofessional persons, unfamiliar with the action of the river, who confuse periodic flooding with erosion (this despite the deep historical association between the Omaha and the river).

But there is also a sense that scientists and judges swim in different rivers. In his dismissal of the government’s interpretation of avulsion, Bogue distinguishes the two:

“The government has, no doubt, derived this theory of an avulsion from a more ‘scientific’ analysis of the river movements than that which underlies the common law. From our vantage point at this time, it seems that if plaintiffs were to prevail in this suit, it could only have been by convincing this Court that this more ‘scientific’ view of river movements, which would require constant attention to only the position of the thalweg, would be somehow harmonious with the common law” (Omaha I, page 91).

Indeed, the scientific river is not always ‘harmonious’ with the common law: the distinction between avulsion and accretion is a legal one. While fluvial geomorphologists may acknowledge these categories, they are ‘ideal types’, at the end of a continuum of overlapping and fuzzy possibilities. One expert witness makes this clear, noting that “Avulsion is a term I don’t use technically” (Dr George R Hallberg, Omaha I, footnote 45, page 641).

The scientific river is differently legible, being governed by general scientific laws of rivers, and according to distinctive typologies. So, for example, Church (1992) provides a typology that classifies large channels (straight; sinuous; irregular—wandering; irregular meanders; regular meanders, tortuous meanders) as well as classifying the lateral activity of large channels [although see Keylock’s (2003) antirealist critique of the naming of geomorphic objects]. There is room for ambiguity here. In his discussion of meanders, Knighton (1998) notes that the definition of a meander is itself somewhat arbitrary, even though a sinuosity in excess of 1.5 is often used.

“There is no guarantee that the feature will be perfectly regular or that regularity will be maintained over a long distance.... In reality meanders are neither completely regular nor purely random and can be regarded as a compromise between the two. If the meandering process is assumed to be deterministic and capable of producing quasi-regular forms, then the random element is provided by the environmental conditions in which that process operates” (pages 213 – 215).

As can be seen, morphology and fluvial process are simultaneously constraining and enabling (Roy and Lane, 2003, page 120): “Form influences process that will result in the modification of the form.”

River science entails a complicated set of dynamics and causal variables. The Rivers Handbook (Calow and Petts, 1992) identifies a long list, including water chemistry, in-stream hydraulics, channel morphology, river biota, and energy budgets. Explaining the migration of meanders, such as Blackbird Bend, is thus a challenging task. For Knighton (1998), while certain patterns can be discerned (typologies of migration, including translation, rotation, extension and lobing, and compound growth) patterns of change may be ‘complex’:

“The frequency and distribution of these movement types remain uncertain in a general sense, even though many meander change studies have now been carried out” (page 227).

But how to explain fluvial change? Modelling strategies, Knighton (1998) notes, are sometimes deterministic, assuming the operation of finite laws of behavior, yet may...
also be probabilistic. The latter recognize that geomorphic systems can be complex and historically layered, even going so far as to argue that rivers are inherently random, characterized by chaotic and discontinuous behaviour (Knighton, 1998, pages 5–6). Roy and Lane (2003) gesture towards a ‘postmodern’ view of the river in which ‘every meander bend... is unique, and the creation of any sort of generalization is to exclude the very essence of the feature that is of interest’ (page 117). Favis-Mortlock and de Boer (2003) similarly explore notions of nonlinearity and ‘deterministic chaos’ in geomorphology.

**The idiographic river**

In part, the failure of the river to conform to the requirements of the law that movement be ‘clean and precise’ reflects the fact that the court is dealing with an irreducibly specific phenomenon, the Missouri. Bogue acknowledges that he is dealing with a most particular phenomenon, operating prior to the 1940s as “in a wild and uncontrolled state” (Omaha I, page 72); “where the law demands precise concepts, nature has supplied the rather erratic behavior of the Missouri River” (Omaha I, page 89). He quotes at length from a report from 1881, which notes the ‘remarkable impetuosity’ and ‘rapidity’ of its current, and the ‘general instability’ of its banks, and the ‘tremendous effects’ and ‘astonishing changes’ wrought by floods (Omaha I, page 72; cf Beck, 1967).

This alerts us to an idiographic river which further complicates legibility, characterized by a huge energy budget, frequent flooding, and a massive sediment load. The crucial legal distinction between ‘river’ and ‘land’ is particularly uncertain in the case of the Missouri River. At Blackbird Bend the sediment load is around 300 acre-feet per day: in other words, three hundred acres of soil one foot deep pass this bend daily—enough for a small farm (Steinberg, 1995, page 29). Nicknamed ‘Big Muddy’, the Omaha call the river ‘Nu-shu-da’, or ‘Smoky Waters’. For Bogue these sediment loads create “tremendous erosive power”. The effect is a kinetic dialectic between land and water: “the flow itself makes its boundaries and the character of the flow is in turn influenced by the nature of its boundaries” (Omaha I, page 72).

If the river is land, the land is also river. The value of the soil reflects its origin as sediments deposited by fluvial action. Only after the 1940s, when engineers stabilized the river banks through an intricate set of dams, revetments, dikes, and abatis (thus locking the channel reworkings at Blackbird Bend in place), did the river become a little less erratic. This is a common refrain in discussions of the Missouri and Mississippi Rivers. Avulsion and accretion, note many, may work on the Thames, but not on the mighty Missouri (cf Jefferis v. East Omaha Land Co, 134 U.S. 178, 1890, 187). Rivers here, in this place, are distinct, such that general principles (both legal and scientific) may not apply. Thus, for example, given that accretion entails the ‘gradual and imperceptible’ deposition of materials, it has been argued (unsuccessfully) that the accretion rule was not applicable to land which borders on the Missouri River;

> “because of the peculiar character of that stream and of the soil through which it flows, the course of the river being tortuous, the current rapid, and the soil a soft, sandy loam, not protected from the action of water either by rocks or the roots of trees; the effect being that the river cuts away its banks, sometimes in a large body, and makes for itself a new course, while the earth thus removed is almost simultaneously deposited elsewhere, and new land is formed almost as rapidly as the former bank was carried away” (Nebraska v. Iowa, 143 U.S. 359, 1892, 368).

The court had determined, however, in an earlier decision that the very exceptionality of the Missouri and the lack of any human observers of its rapid remaking meant that it was even more pressing that the law of accretion be applied (Jefferis v. East Omaha Land Co. 134 U.S. 178, 191, 1890).
Conclusions

Why is simplification complicated? One option is to follow Steinberg (1995) and argue that it is the site upon which the grid is imposed that complicates boundary drawing. Nature is the problem, in short. While the court may seek to fix the river as an object of legal scrutiny, from which boundaries can be simply derived, it proves uncooperative. The river is mobile, illegible, and obdurate. At Blackbird Bend, “the river fought back” (page 49). Environmental histories are hard to discern at the best of times. This is particularly so when the court must fit the evidence into legal categories, as Bogue notes. In law, boundaries are bright lines—clear and determinate. But the edge of a river is mobile and indistinct. Water shades into mud, which may become land. The river, in that sense, is a legal actor.

This may be true, but such an account is partial. Once we take simplification itself a little more seriously, and read more carefully the decisions that Steinberg treats summarily (in fact, he simplifies them), we find a more complicated story. While the judiciary did manage to impose a grid of sorts on the Missouri River, and resettle the unsettled, this was far from straightforward. Boundary work is hard work, it seems. Resolution took fifteen years, and huge amounts of resources and human energy. Avulsion and accretion, supposedly stable and discrete legal categories, threatened to become entangled. Simplifications relied upon, and sometimes conflicted with, other legal shortcuts. Judges found the river both readable and illegible. Simplifiers fought over the terms of simplification, as well as the meaning of the data they encountered. Science provided a basis for simplification, yet also confounded it. Generalizations were successfully mobilized, but also challenged by specificity.

Further, when we look more carefully, the sharp line that the court marks out between nature and property law, noted by Steinberg, is far from secure or static. Rather, the court constantly crosses it, even as it seeks to simplify. Thus, the court valiantly seeks to trace the ‘natural’ movements of the river. But it does so by trying to discern a human set of categories that are tied to a social concept, property. It fixes nature as a discrete object, and subjects it to analysis, but then assigns agency to the river, calling it impetuous and inconstant. The river is seen as blind, indifferent to the human outcomes of its movements. Yet, when the channel is fixed in place by human hand, and becomes an ‘organic machine’ (White, 1995), this blindness continues: the court explicitly rejects the idea that channel stabilization unfairly disadvantages any party dispossessed by ‘natural’ channel movement.

Thus, while it is tempting to follow the critics, and characterize property law as reductive and simplistic, we must recognize that property law itself is far from a unitary machine, but is a hybrid and sometimes unsteady amalgam of the general and the specific, of ‘mud’ and ‘crystals’ (Rose 1994), and of science and jurisprudence. We can agree with Steinberg that “property law... is another tool for imposing order on the chaos of nature” (1995, page 8), yet recognize that is far from a sharp or a single-edged tool.

In this, Steinberg’s characterization of property as a ‘tool’ is perhaps one useful place to begin. Property, put another way, is a verb, as well as a noun. It entails a complicated set of machinic engagements and creative interventions. The practices of property seek to record, register, determine, mediate, inscribe. These practices often have a networked quality, allowing for action at a distance. They are, moreover, not simply neutral conduits: they may, by their workings, configure objects and people (and ideas and representations) in particular ways. These practices can be lumbering and stupid, as critics suggest. But they can also be surprisingly reflexive, creative, mobile, and tentative. They can be incomplete and prone to breakdown. But they can also produce remarkably powerful geographies. Let me conclude by clarifying
this argument. I do so, I should note, somewhat tentatively—perhaps my comments should be taken as a set of research hypotheses rather than conclusive comments.

The first point to underscore is that property has a practical dimension. By this, I mean that property cannot be reduced to a set of detached ideas or representations, but must be recognized as also entailing a set of enactments, objects, networks, and actions. Such practices are often prosaic and sometimes more visible. The Blackbird Bend dispute is an obvious example. Tempting though it may be to confine the dispute to the head of the judge, the dispute, adjudication, and enforcement of the decision also relied upon complex networks of objects (No Trespassing signs, sand bars, recording devices, theodolites, cottonwood trees, thalwegs) and practices (reading, mapping, digging, fencing). This entails the organization of space (networks, assemblages, boundaries, and so on) as well as the organization of time. Thus, the parcels of land in dispute can be thought of as having a legal biography, traceable through alienations and transfers and dispossessions. The things of property, moreover, are not always obvious, but have to be produced through forms of legal practice by which they are inscribed, stabilized, and appraised. ‘Bar D’ is a case in point. Can it be discerned? And if so, is it river, mud, or land? (Law, 2002; Painter, 2006; Pottage, 1994).

To the extent that such objects and practices appear mundane and obvious, they may appear to be simply bit players in a more exciting ideational drama. The tendency has been to turn our attention away from the world of things, whether those are human bodies or stuff, more generally, and focus on representation, culture, and discourse. Pickering’s (1995) comments on science are appropriate: he criticizes the ‘representational idiom’ in describing a form of science in which people and things tend to appear as ‘shadows of themselves’.

‘Scientists figure as disembodied intellects making knowledge in a field of facts and observations [and] language’ (page 6).

However, this is to mistake the complex significance and effects of things, practices, and engagements (Brown, 2001; Pels et al, 2002). We should acknowledge the “mutual involvement of people and materials in an environment…. We work from within the world, not upon it” (Ingold, 2000, page 68). Similarly, the practices of property entail the entanglements of persons and things, such as clods of earth (Pietz, 2002) or keys and doors (Latour, 2000).

Second, it is through such practices that property becomes present in everyday life. Rather than accepting the appearance of property as a reified, already-there field which appears to stand apart from the social world, we might usefully regard this appearance as an effect or accomplishment. Property is not ‘structure’, but effect (cf Painter, 2006). This prompts at least two observations. First, to the extent that we encounter something we identify as ‘property’ in the world, we do so by virtue of our encounters with the practices of property rather than with some prior and separate entity. The effect of such practices is to make property appear to exist and to be present in our world. Rather than asking what property is, perhaps, we should ask how it is (Delaney, 2003; 2004). Second, we might argue that property helps constitute the very ground upon which the ‘effect’ of property is experienced. I draw here from Mitchell’s (2002) analysis of colonial property mapping in Egypt. The significance of the cadastre, he argues, rested not in its accuracy, but rather in the way in which it opened up a conceptual divide between the land and the law. This act of removal came to produce what seemed to be an absolute gap between reality and its representation; between the particularities of land, as local object, and the universality of property, as global law. In this sense, “the production of private property creates the object quality of modern space. The forces, powers, processes and claims whose tension and interaction gave rise to rural life were to be replaced by a world resolved into two dimensions, the inert
materiality of land on one side, legal codes and property rights the other. Thing versus idea, reality versus abstraction, space versus its meaning” (page 78).

Third, we must also note that the production of property is partial, incomplete and imperfect. As Painter (2006) notes, the pronouncements of state officials are multivocal and diverse. Similarly, as we saw above, judges enunciated the river in multiple and often conflicting ways. While this may reflect the irreducible complexities of nature, it also speaks to the diversities of legal practice, the tensions between the universal and the particular, or the collisions of science and jurisprudence. Legal objects and categories, such as avulsion and accretion, did not carry over from one judicial site to another, but became reconceived and remapped. Bogue’s ‘bright lines’ became muddy and indistinct when taken up by the Appeals Court. The geographies of property, here and elsewhere, are also heterogeneous, complex, and contradictory. State officials’ pronouncements concerning the distinction between public and private space in urban settings, for example, are belied by the practices and understandings of residents, who tend to view public and private as in constructive dialogue rather than sharp opposition (Blomley, 2005a; 2005b). Attempts to fix boundaries through maps or boundary markers, for example, are complicated by failures to enroll either technology (Barnes et al, 2000; Bennett, 1991; Brückner and Poole, 2002; Pottage, 1994) or people (Delle, 1999; Given, 2002; Vandergeest and Peluso, 2001).

Yet, despite these frequent slippages and ‘failures’ of property, property manages to attain settlement and resolution. Perhaps the very lack of coherence of law allows it to produce space: as Law (2001) argues, any organization that is gripped with a single vision of reality is not long for this world. Either way, despite the odds, a grid was successfully superimposed upon Blackbird Bend. Avulsion and accretion proved to be instruments of successful action, to borrow from pragmatism. Certainty was extracted—albeit by hard work—from a situation of legal uncertainty (even, perhaps, indeterminacy). This, my final point, is worth underscoring. Steinberg’s central conclusion is, as he puts it, that “real estate isn’t”. ‘Real’ property, in other words, is unreal and illusionary. Accretion and avulsion, like other simplifications, are head tricks that we play upon ourselves. Property law, he argues, has “helped us to reimagine and reinvent what we understand to be the real world” (1995, page 17). In this, he joins a distinguished roster of critics, such as Singer (2000) and Rose (1994), who reveal the delusions of property. Gray (1994, page 159) similarly describes property talk as a form of mutual deception, the goal being to open a space for alternative treatments of property, justice, and nature.

This is a worthwhile and important project, to which I have tried to contribute in the past (Blomley, 2004). However, we must recognize the challenges it faces. Rather than viewing Blackbird Bend as an example of the incoherence and unreality of real estate, I would also want to see the decisions as testament to the organizing power of law. One can, as I have done, read the decisions against the grain, and note the patching and ‘work-arounds’ that are required. Yet, determinacy was produced. This applies not only to the Blackbird Bend case itself, but more generally. For one of the crucial ‘effects’ of the practices of property is to produce the appearance of resolution, order, certainty, and security (Blomley, 2003). This should not be overlooked: despite its manifest exclusions, expulsions, and violences, it appears equitable and benign. Even though contradictory, messy, and unsettled (Blomley, 2004), property presents itself as certain and secure. Property law, like any simplification, can be absurd. Yet to stop here is to risk ignoring the ways in which such absurdities organize the world for us in often brutally efficient and powerful ways.
Acknowledgements. Particular thanks to my friends in the SFU Human Geography work-share group, as well as colleagues at the Universities of Oxford and Stockholm, where I presented versions of this paper, three anonymous reviewers for their invaluable advice and suggestions, and to Jay Taylor. Thanks also to John Ng, who produced two of the maps, and to Mario Berti, for last-minute research assistance. I am also grateful to Sarah Whatmore for the initial invitation that prompted this article.

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