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Recognizing the Shared Ownership of Subsurface Resource Pools

Peter M. Gerhart

Robert E. Cheren

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RECOGNIZING THE SHARED OWNERSHIP OF SUBSURFACE RESOURCE POOLS

Peter M. Gerhart[†] & *Robert D. Cheren*[‡]

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INTRODUCTION

An important function of legal theory is to provide a framework for understanding the common law and its regulatory substitutes. Now that horizontal slickwater fracturing has renewed popular and

[†] Professor of Law, Case Western Reserve University.

[‡] J.D., 2013, Case Western Reserve University School of Law.

academic interest in the governance of subsurface resource pools, it is helpful to apply property theory to understand the law's response to issues concerning resources that lie under, or can be extracted only by going under, more than one piece of property. If property theory is to be helpful, it ought to sharpen our ability to correctly diagnose the social problems addressed by the law and to identify the coherence of, and justification for, the law's response to those problems.

By this measure, property theory has underserved our understanding of both the problem of subsurface resource pools and the law's response to that problem. Property theory was ill-equipped to address the problem of subsurface resource pools because it had only two paradigms for identifying and addressing the problem: a paradigm of private property and a paradigm of commons property. Because neither paradigm adequately addresses the problem of subsurface resource pools, the law applicable to water, oil, and gas has been misunderstood and mischaracterized.

In this Article, we argue that property theory, appropriately understood, shows that subsurface water, oil, and gas ought to be treated as shared property that can be exploited, if it is to be exploited at all, by the coordinating agreements of owners of the surface property, or their licensees, supervised by common law courts. We therefore offer the paradigm of shared property as the appropriate analysis for thinking about the law's approach to rights in oil and natural gas. We also argue that the shared property paradigm is largely consistent with the common law's approach to subsurface resource pools, even though conventional understanding of the law vacillates between the private property and commons property paradigms.

Much of this Article is revisionist. We argue, unconventionally, that the common law embraced the paradigm of shared property in much of its regulation of subsurface resource pools because it essentially treated those resources as owned by tenants in common, as modified by the common law nuisance exception for injuries to subsurface resource pools. Under this reading, the special common law rules regarding subsurface resource pools have been misunderstood either as providing for (1) commons property treatment of subsurface resource pools underground followed by private property treatment after the resources are extracted from the subsurface pools or (2) private property treatment of the resources even while underground but subject to loss of title if the resources crossed property boundaries. Under our reading of the cases, when interpreted against the paradigm of shared property, the common law consistently recognized shared ownership of subsurface resource pools yet limited surface owner's rights to quiet enjoyment of subsurface resource pools based solely on courts' own perceived incapacity, because the resources are hidden, to understand the causal relationship between land use and disruption of enjoyment of subsurface resource pools. But this limit did not prevent courts from coordinating the exploitation of subsurface resource pools between surface owners by

recognizing causes of action for malicious interference, waste, and unreasonable exploitation.

This analysis supports our claim that the property issues inherent in today's concerns over horizontal slickwater fracturing can be addressed under private agreements that are subject to judicial supervision.¹ Moreover, because we now have the seismic technology to understand resource location and flows, the common law's reluctance to provide common owners of shared property with an accounting should dissipate.

Part I examines in detail the common law of subsurface resource pools. Part II demonstrates this common law of subsurface resource pools is an application of the shared property paradigm. Part III suggests that judicially supervised private governance regimes can ensure that subsurface resource pools are exploited efficiently and fairly.

I. CORRECTING THE CONVENTIONAL VIEWS OF THE LAW OF SUBSURFACE RESOURCE POOLS

Analytically, subsurface resource pools of oil, gas, and water pose distinctive problems for courts because of two distinguishing characteristics. First, subsurface resource pools are not visible from the surface. Second, these resources are fluids that are susceptible to movement across property lines or that (as in the case of horizontal slickwater fracturing) can be extracted only by activities that are not confined within property boundaries. The common law courts responded to these characteristics in two opposing ways. On the one hand, emphasizing the hidden nature of the resource, common law courts have consistently held that interference with a surface owner's enjoyment of the resource is generally not actionable. On the other hand, common law courts responded to the migratory character of subsurface resources by recognizing actions for malicious interference, waste, and unreasonable exploitation. The hidden character limited the law's protections for the quiet enjoyment of subsurface resource pools, whereas the migratory character gave rise to causes of action that coordinated uses between owners.

These two characteristics gave rise, in other words, to legal approaches that varied with the question courts were considering. These variations, in turn, made it difficult for theorists to pin down a

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1. Oil and gas recovered from shale deposits is different from other pooled resources in that it does not migrate as easily from one location to another. Nonetheless, we can apply the property regimes developed for common pool resources to the property regimes applied to hydraulic fracturing because of their similarities. The law applicable to oil and gas has always taken its migratory nature into account; gas recovered from shale migrates less but can be effectively recovered only by horizontal drilling that crosses surface boundaries. The oil and gas do not migrate but the method of extraction, in a sense, does.

theory of subsurface resources that adequately described the range of decisions that courts were making. Moreover, theorists were limited in the paradigms around which they could organize their interpretation of legal doctrine. In Part I.A, we summarize the conventional theoretical approaches and explain their inadequacy.

A. *Conventional Views of the Law of Subsurface Resource Pools: Ferae Naturae, Ad Coelum, and “Drill, Baby, Drill!”*

Uncounted first-year property students encounter the following in a leading property casebook:

Oil and natural gas commonly collect in reservoirs that underlie many acres of land owned by many different people. The resources have a fugitive character in that they wander from place to place. Oil or gas once under the land of *A* might migrate to space under the land of *B* as the result of natural circumstances or because *B* drops a well and mines a common pool beneath *A*'s and *B*'s land. . . .

When these obviously problematic situations first led to litigation—usually (but not always) a suit by someone like *A* to recover the value of gas or oil drawn away by someone like *B*—the courts were induced by the fugitive nature of the resources in question to liken them to wild animals. And because ownership of wild animals had long been settled in terms of the rule of capture, the courts reasoned that ownership of oil and gas should be determined in the same manner.²

This characterization reflects one of three conventional conceptions of the common law of subsurface resource pools—namely that because resources in subsurface pools are migratory, like wild animals, they are unowned until captured, and once captured, title vests in the captor.³ Under this *ferae naturae*⁴ view, water, oil, and gas are commons property while they remain underground.

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2. DUKEMINIER ET AL., PROPERTY 36 (7th ed. 2010) (footnote omitted).
 3. Robert E. Hardwicke, *The Rule of Capture and Its Implications as Applied to Oil and Gas*, 13 TEX. L. REV. 391, 393 (1935) (“The owner of a tract of land acquires title to the oil or gas which he produces from wells drilled thereon, though it may be proved that part of such oil or gas migrated from adjoining lands. The antithesis of the rule of capture is: The owner of a tract of land owns the oil and gas in place and, should such minerals migrate to a neighbor’s land and be produced from wells thereon, title would not vest in the neighbor, but, to the contrary, the migrating oil or gas, or at least an amount equal to that which migrated, could be recovered by the true owner.”); see also Laura H. Burney, *A Pragmatic Approach to Decision Making in the Next Era of Oil and Gas Jurisprudence*, 16 J. ENERGY NAT. RESOURCES & ENVTL. L. 1, 9 (1996) (“By analogizing to the common-law rule used to determine rights in wild animals (*ferae naturae*), courts adopted the rule

The *Restatement (Second) of Torts* offers another conventional conception of the common law of subsurface resource pools:

The “English rule” relating to the use of ground water was adopted in a number of American states. It gave each landowner complete freedom to withdraw and use ground water and made no attempt to apportion the supply among possessors off overlying land It was based on the premise that groundwater is the absolute property of the owner of the freehold, like the rocks, soil and minerals that compose it, so that he is free to withdraw it at will and do with it as he pleases regardless of the effect upon his neighbors. . . . Although framed in property language, the rule was in reality a rule of capture, for a landowner’s pump could induce water under the land of his neighbor to flow to his well—water that was in theory the neighbor’s property while it remained in place.⁵

Under this view, because the surface owner owns the land, it logically follows that the surface owner must absolutely own the subsurface resource pools contained within it and be privileged to “do with it as he pleases.”⁶ Under this *ad coelum* view, water, oil, and gas are owned by the owner of the surface under which they lie, but ownership is transferred as water, oil, and gas cross the property line from one surface owner to another.⁷ Further, it follows from the absolute nature

of capture to define a property owner’s rights in oil and gas beneath her property. Under the rule of capture, an owner of land ‘acquires title to the oil or gas which he produces from wells drilled thereon.’” (quoting Hardwicke, *supra* note 3, at 393)); Jonathan H. Adler, *Conservation Through Collusion: Antitrust as an Obstacle to Marine Resource Conservation*, 61 WASH. & LEE L. REV. 3, 50 (2004) (“Under the rule of capture, landowners acquire property rights to oil upon extraction.”).

4. This translates to “of a wild nature.” BLACK’S LAW DICTIONARY 696 (9th ed. 2009).
5. RESTATEMENT (SECOND) OF TORTS, ch. 41, topic 4, intro. note (1979); see also DUKEMINIER ET AL., *supra* note 2, at 37–38 (“Groundwater (water found in underground aquifers) . . . was governed early on by the English rule of absolute ownership, which allowed each landowner over an aquifer to withdraw freely without regard to effects on neighbors.”).
6. RESTATEMENT (SECOND) OF TORTS, ch. 41, topic 4, introductory note, at 256 (1977).
7. The *ad coelum* phrase comes from the Latin expression *cujus est solum, ejus est usque ad coelum et infera*—“whoever owns the soil, it is theirs all the way up to Heaven and down to Hell.” The phrase was coined by a medieval, not ancient, Italian, Accursius. See Clement L. Bouvé, *Private Ownership of Airspace*, 1 AIR L. REV. 232, 246 (1930) (providing a general discussion of the Latin phrase, its origin, and its place in Roman Law). It was popularized by Blackstone five centuries later. See 2 WILLIAM BLACKSTONE, COMMENTARIES *18. This concept has not been especially helpful and courts have spent a good deal of

of the ownership of the resources while they are beneath the surface owner's property that the surface owner is privileged to extract it and thereby cause additional water, oil, or gas to migrate across the boundary and become his property.

Still a third conventional view comes from one historically prominent commentator, Walter Summers, who is agnostic as to the ownership of resources in subsurface pools—subscribing neither to the *ferae naturae* view nor the *ad coelum* view—but adamant that extraction is privileged and immune from claims of unlawful drainage because otherwise the resources could not be exploited.⁸ For Summers, any surface owner could protect her interests by drilling faster than her neighbors. This rather pragmatic view is not easily denominated by a venerable Latin phrase, but is best summed up by the more recent political jingoism, “Drill, baby, drill!”

These conventional theories about the grounds on which courts were regulating subsurface resource pools dramatically reflect a near myopic focus on one feature of the legal regime—the ability of one surface owner to legally drain oil and gas from beneath a neighbor's property. This feature of the law entered popular culture with the 2007 film *There Will Be Blood*, in which Daniel Plainview shouted at his rival in the climactic final scene:

time and energy in attempts to get out from under its burdensome logic. See, e.g., *Hinman v. Pac. Air Transp.*, 84 F.2d 755, 758 (9th Cir. 1936) (rejecting a literal interpretation of the *ad coelum* doctrine and holding that landowners only own “the space above the ground” the owner “can occupy or make use of” as “[a]ll that lies beyond belongs to the world”).

8. WALTER L. SUMMERS, A TREATISE ON THE LAW OF OIL AND GAS § 24, at 71–72 (1927) (“Suppose A is the owner in fee of a tract of land, Blackacre, . . . and that B is a like owner of a nearby or adjoining tract of land, Whiteacre, and that beneath these there is an oil and gas reservoir Suppose, further, that A drills a well upon Blackacre, tapping the oil or gas reservoir at such a point that by the natural pressure existing in the reservoir oil or gas come from under B's land, Whiteacre, into A's well on Blackacre, and are so reduced to actual possession by A; have B's legal rights in respect to the oil or gas *in situ* under Whiteacre been violated? Or, to put it another way, was A legally privileged to take the oil and gas from under Whiteacre in the manner described? The courts are of the unanimous opinion that A's acts of taking oil or gas in the manner described from under both tracts of land are legally privileged, and that B has no rights that A so take the oil and gas from Whiteacre by acts lawfully done upon Blackacre as above described.”); W.L. Summers, *Legal Rights Against Drainage of Oil and Gas*, 18 TEXAS L. REV. 27, 29 (1939) (“[Courts] knew that one landowner could not produce from his land without taking some of the oil and gas from adjacent lands, but they were likewise aware of the fact that the economic value of oil and gas could not be realized without production; consequently, they ruled in favor of unlimited privileges of taking.”).

Drainage! Drainage, Eli, you boy. Drained dry. I'm so sorry. Here, if you have a milkshake, and I have a milkshake, and I have a straw. There it is, that's a straw, you see? You watching? And my straw reaches across the room, and starts to drink your milkshake. I drink your milkshake! I drink it up!¹⁹

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9. THERE WILL BE BLOOD (Paramount Vantage and Miramax Films 2007). In the scene, Plainview is explaining that he has already extracted the oil beneath a certain property despite never drilling on its surface. Director Paul Thomas Anderson, who received an Academy Award nomination for the screenplay, told several media outlets that the film's iconic "I drink your milkshake" lines "came straight from a transcript [Anderson] found of the 1924 congressional hearings over the Teapot Dome scandal." Scott Bowles, *'Blood' Fans Drink Up Milkshake Catchphrase*, USA Today (Feb. 4, 2008), http://usatoday30.usatoday.com/life/movies/news/2008-02-03-blood-milkshake_N.htm ("In explaining oil drainage, [former Secretary of the Interior Albert] Fall's 'way of describing it was to say "Sir, if you have a milkshake and I have a milkshake and my straw reaches across the room, I'll end up drinking your milkshake,"' Anderson says. 'I just took this insane concept and used it.'"); see also Scott Foundas, *Paul Thomas Anderson: Blood, Sweat and Tears*, L.A. WKLY. (Feb. 4, 2008), <http://www.laweekly.com/2008-01-17/film-tv/blood-sweat-and-tears> ("I'm sure I embellished it and changed it around and made it more Plainview. But Fall used the word 'milk shake,' and I thought it was so great."). Many film-related websites and blogs reproduced Anderson's anecdote about the origin of the lines.

But searches of the transcripts of the relevant Teapot Dome investigation hearings produced no testimony or other record similar to what Anderson described. *Leases upon Navy Oil Reserves: Hearing on S. Res. 147, 282, 294, and 434, Before the S. Comm. on Public Lands and Surveys*, 67th–68th Cong. (1923–1924). No form of the word "milk shake" was found in the transcripts, and the few mentions of other words central to the quoted lines, like "straw" and "drink," appear only in unrelated contexts. However, the Congressional Record does contain a discussion of subsurface resource extraction—from eighty years later—with specific imagery very similar to the film's. In 2003, Senator Peter Domenici remarked on the Senate floor during a debate over drilling in the Arctic National Wildlife Refuge:

And you see, way far away, the oil is underground, and it is going to be drilled and come up . . . Here is a giant reservoir underground. . . . [J]ust like a curved straw, you put it underground and maneuver it, and the "milk shake" is way over there, and your little child wants the milk shake, and they sit over here in their bedroom where they are feeling ill, and they just gobble it up from way down in the kitchen, where you don't even have to move the Mix Master that made the ice cream for them. You don't have to take it up to the bedroom. This describes the actual drilling that is taking place.

149 CONG. REC. 6729 (2003). Coincidentally, both Fall (1912–1921) and Domenici (1973–2009) represented New Mexico in the Senate.

Although the conventional views explain drainage rights in reassuringly simple ways, they do not reflect what courts have said or done over the last century. Instead, they reflect the failure of property theory to develop the appropriate paradigm for addressing the social issues raised by subsurface resource pools. In particular, they reflect an attempt to shoehorn our understanding of judicial treatment of subsurface resource pools into the familiar commons property and private property paradigms. In actuality, courts were applying a shared property paradigm, one adjusted to account for the fact that subsurface resources are hidden from view.

In our revisionist description of the common law, we show that when faced with questions about the disruption of subsurface resource pools, courts were not concerned about title but about the hidden nature of the resources and the resulting inability of courts to determine which oil and gas was underneath which surface property. Instead of focusing on the capture of wild animals, courts held that injuries to subsurface oil and gas are *damnum absque injuria* by analogy to earlier cases dealing with subsurface water. Moreover, although courts could not offer a remedy for diminution of subsurface resource pools because the resources were hidden, the migratory nature of the resources induced courts to develop several doctrines that required each surface owner to take into account the interests of other surface owners when deciding how to exploit the subsurface common pool resource: causes of action for malicious interference, waste, and unreasonable exploitation. Far from following the conventional *ferae naturae* view, the *ad coelum* view, or a “Drill, Baby, Drill!” view, the common law recognized, on the one hand, limits on the judicial ability to regulate hidden resources (the subject of Part I.B) while, on the other hand, recognizing the responsibilities that arose from shared migratory ownership of subsurface resource pools (the subject of Part I.C).

*B. Response to the Hidden Nature of Subsurface Resource Pools:
Disrupting Subsurface Resource Pools is Damnum Absque Injuria*

When common law courts were called on to resolve disputes arising from one owner’s complaints about neighboring activities that interfered with the owner’s enjoyment of subsurface water, oil, or gas, they refused to provide a remedy. The activities complained of were quite varied, but courts invariably held that interferences with subsurface water, oil, and gas were *damnum absque injuria* because of the hidden character of these resources.

The term *damnum absque injuria*, damage without injury, denotes a conclusion without revealing the reason for the conclusion, for the distinction between “damage with injury” and “damage without injury”

is unexplained.¹⁰ This is because *damnum absque injuria* simply announces a common law result—it conveys neither a justification for, nor a description of, a particular kind of injury.¹¹ It is of considerable vintage, going back at least as far as *Hamlyn v. More*, the 1410 case exempting fair competition from nuisance liability.¹² It means that a

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10. Chief Justice Marshall invoked the *damnum absque injuria* framework in the second inquiry in *Marbury v. Madison*:

It behooves us then to enquire whether there be in its composition any ingredient which shall exempt it from legal investigation, or exclude the injured party from legal redress. In pursuing this enquiry the first question which presents itself, is, whether this can be arranged with the class of cases which come under the description of *damnum absque injuria*—a loss without an injury.

This description of cases never has been considered, and it is believed never can be considered, as comprehending offices of trust, of honor or of profit. The office of justice of peace in the district of Columbia is such an office; it is therefore worthy of the attention and guardianship of the laws. It has received that attention and guardianship. . . . It is not then on account of the worthlessness of the thing pursued, that the injured party can be alleged to be without remedy.

Marbury v. Madison, 5 U.S. (1 Cranch) 137, 163–64 (1803). As in other cases, *Marbury* provides no meaningful distinction between, in the language of Marshall, loss *without* injury and loss *with* injury. It is, as always, a maxim denoting a result but not a justification for the result.

11. The *damnum absque injuria* cases are similar to judicial cognizability requirements for causes of action brought in federal court in origin as well as substance. The common law nuisance cause of action and its exceptions under the *damnum absque injuria* framework originated in the English crown courts. The crown courts in that time exercised jurisdiction alongside seigniorial courts, as the federal courts exercise jurisdiction alongside state courts. This dual judicial structure breeds wholesale rejections of entire classes of causes of action as the superior judicial body shapes and optimizes its jurisdiction. Seigniorial courts were unwilling to limit jurisdiction or reject classes of actions as this would restrict a lord's power without any benefit to the lord. In any given case, the seigniorial court could just rule against a particular plaintiff without limiting the power to decide a similar dispute in the future. When American states imported the common law of the English crown courts, they imported the practice of jurisdictional optimization as well and it continued unabated, perhaps because it had by that time proved so beneficial to the growth and development of the English legal system.
12. *Hamlyn v. More*, Y.B. 11 Hen. 4, fol. 47, Hil., pl. 21 (1410) (Eng.); JOHN BAKER, BAKER AND MILSOM: SOURCES OF ENGLISH LEGAL HISTORY 671–73 (Oxford Univ. Press 2d ed. 2010) (1986) [hereinafter BAKER & MILSOM]. Before *Hamlyn v. More*, proprietors of capital projects could sue upstart competition. See Robert D. Cheren, Note, *Tragic Parlor Pigs and Comedic Rascally Rabbits: Why Common Law Nuisance Exceptions Refute Coase's Economic Analysis of the Law*, 63 CASE W. RES. L. REV. 555, 572 (2012).

court has determined that (1) a class of injuries never gives rise to nuisance liability, (2) a class of activities is immune from nuisance liability, or (3) injuries suffered at the hand of a class of causal agents never give rise to nuisance liability. The common law limitation on actions for interference with subsurface water, oil, and gas and the American rule on light and air are of the first type.¹³ The privilege to inflict injury through fair competition (an exception to the nuisance concept), is of the second type.¹⁴ The English rule exempting activities and injuries from the nuisance regime if the harm flows through wild animals is of the third type.¹⁵ In each of these cases, common law courts held that a nuisance action does not lie.

The common law limitation on actions for interference with subsurface water, oil, and gas can be traced to the English case of *Acton v. Blundell*.¹⁶ In *Acton*, the court held that a neighbor's interference with subsurface (as opposed to visible) water resources was *damnum absque injuria*. A cotton-spinner brought an action against an operator of a coal pit whose mining activities allegedly interfered with the cotton-spinner's use and application of "the water of certain underground springs, streams, and watercourses" in the cotton-spinner's operation of his mill.¹⁷ The supply of water was at first "considerably diminished" and ultimately "rendered altogether

13. See *Acton v. Blundell*, (1843) 152 Eng. Rep. 1223 (Exch.); 12 M. & W. 324 (Eng.); *Fontainebleau Hotel Corp. v. Forty-Five Twenty-Five, Inc.*, 168 So. 2d 317 (Fla. 1964).

14. See *Hamlyn v. More*, Y.B. 11 Hen. 4, fol. 47, Hil., pl. 21 (1410) (Eng.); BAKER & MILSOM, *supra* note 13, at 672.

15. See *Boulston v. Hardy*, (1596) 77 Eng. Rep. 216 (C.P.); *Bowlston v. Hardy*, (1596) 78 Eng. Rep. 794 (C.P.).

16. *Acton*, 152 Eng. Rep. 1223; 12 M. & W. 324. A Massachusetts case from 1836 held an interference with subsurface water *damnum absque injuria*, but with the important caveat that the plaintiff had not gained prescriptive rights to the water by adverse use for twenty years. *Greenleaf v. Francis*, 35 Mass. (18 Pick.) 117, 122–23 (1836). The plaintiff's claim is so well and succinctly expressed by the court it is worth repeating here:

[T]he defendant dug to obtain water in his own soil, and in a place where it was convenient for him, near to the well of the plaintiff, and after the defendant's well was dug, the water ceased to flow into the plaintiff's well, so copiously as it did before.

Id. at 122. The dissonance between *Greenleaf* and *Acton* was made evident by an 1868 Massachusetts decision affirming a trial court's refusal to give a defendant the benefit of an *Acton* instruction and directing verdict for a plaintiff in a case where manure stored in a subterranean vault polluted a neighbor's cellar and well. *Ball v. Nye*, 99 Mass. 582, 583–84 (1868). The defendant had requested the jury be instructed that, if liable at all, the defendant could only be liable for the pollution of the neighbor's cellar, not the well. *Id.* at 583.

17. *Acton*, 152 Eng. Rep. at 1232; 12 M. & W. at 347 (Tindal C.J.).

insufficient for the purposes of the mill” by the coal mining.¹⁸ It was well established at the time of *Acton* that

each proprietor of the land has a right to the advantage of the stream flowing in its natural course over his land, to use the same as he pleases, for any purposes of his own, not inconsistent with a similar right in the proprietors of the land above or below; so that, neither can any proprietor above diminish the quantity or injure the quality of the water which would otherwise naturally descend, nor can any proprietor below throw back the water without the license or the grant of the proprietor above.¹⁹

If this principle applied equally to “the enjoyment of underground springs, or to a well supplied thereby” then “undoubtedly” the operator of the coal mill “could not justify the sinking of the coal-pits” to the detriment of the cotton-spinner.²⁰ The court held the principle did not equally apply and that an interference with the enjoyment of subsurface water courses is “not to be governed by the law which applies to” surface water courses.²¹ Rather, the court held such interferences are governed by

that principle, which gives to the owner of the soil all that lies beneath his surface; that the land immediately below is his property, whether it is solid rock, or porous ground, or venous earth, or part soil, part water; that the person who owns the surface may dig therein, and apply all that is there found to his own purposes at his free will and pleasure; and that if, in the exercise of such right, he intercepts or drains off the water collected from underground springs in his neighbour’s well, this inconvenience to his neighbour falls within the description of *damnum absque injuria*, which cannot become the ground of an action.²²

Although the court invoked the talisman of *ad coelum* in its holding, it reached the *damnum absque injuria* result after considering both

18. *Id.* at 1233; 12 M. & W. at 348.

19. *Id.* at 1233; 12 M. & W. at 349; *see also* HENRICI DE BRACON, DE LEGIBUS ET CONSUEUDINIBUS ANGLIAE f. 232b (Samuel E. Thorne ed. & trans., Harvard Univ. Press 1977) (ca. 1245–1257); RANULF DE GLANVILL, TRACTATUS DE LEGIBUS ET CONSUEUDINIBUS REGNI ANGLIE QUI GLANVILLA VOCATUR bk. XIII, c. 36 (G.D.G. Hall ed. & trans., Oxford Univ. Press 1965) (ca. 1187–1189); *Tyler v. Wilkinson*, 24 F. Cas. 472, 474 (C.C.D.R.I. 1827).

20. *Acton*, 152 Eng. Rep. at 1233; 12 M. & W. at 349.

21. *Id.* at 1235; 12 M. & W. at 353.

22. *Id.*; 12 M. & W. at 354.

the role of custom in the common law regulation of surface water courses and the difficulty that would arise from the common law regulation of subsurface resources. The *damnum absque injuria* results in *Acton* and its progeny are based on a judicial sense of incapacity in view of the hidden character of subsurface resource pools.²³

The decisional progeny of *Acton* are legion. The majority of cases, like *Acton*, dealt with subsurface water, rather than oil or gas.²⁴ Soon

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23. Cheren, *supra* note 13, at 591; *see also* Maricopa Cnty. Mun. Water Conservation Dist. No. 1 v. Sw. Cotton Co., 4 P.2d 369, 383 (Ariz. 1931) (“Surface waters are plainly visible, definitely ascertainable, and the effect of their appropriation generally easily foreseen and understood by all. Subterranean waters are necessarily more or less uncertain as to their very existence, speculative as to their character, and frequently incapable of an immediate demonstration of the results of their appropriation of such a nature that investors may safely stake their funds and farmers their future on the success of the project.”); *Roath v. Driscoll*, 20 Conn. 533, 542 (1850) (“[Surface streams] are recognized as *private property*: and their use is regulated by principles of obvious equity and necessity. Their *nature* is defined; their *progress* over the surface *seen*, and *known*, and *uniform*. They are not in the secret places of the earth, and a part of it; nor is there any secrecy in the influences which move them. As soon as they appear and pass over the surface, they assume a distinct character, and are subject to the great law of gravitation. The purchaser of land knows what he purchases, and what controul he can exercise over such a stream, and what are the rights of those above or below him. Each may use them as the common atmosphere; but none can injuriously interrupt their progress, or render them unfit for common use. Their laws are as fixed and public, as the laws of freehold estates.”); *Upjohn v. Bd. of Health*, 9 N.W. 845, 848 (Mich. 1881) (“The movements of subsurface waters are commonly so obscure that rights in or respecting them cannot well be preserved. They do not often have a well-defined channel, and it is not easy in many cases to determine in what direction their movements tend. If corrupted at one point the effect may be confined within very narrow limits, while at another, though no surface indications would lead one to expect it, the taint might follow the water for miles. In some cases a new well at a considerable distance from an old one may withdraw the water from the other and destroy it, while in other cases, in which the same result would seem more likely, there is no perceptible influence.”); *Chatfield v. Wilson*, 28 Vt. 49, 54 (1855) (“The secret, changeable, and uncontrollable character of underground water in its operations, is so diverse and uncertain that we cannot well subject it to the regulations of law, nor build upon it a system of rules, as is done in the case of surface streams.”).
24. *Sw. Cotton*, 4 P.2d at 383; *Roath*, 20 Conn. 533; *Edwards v. Haeger*, 54 N.E. 176, 177 (Ill. 1899); *New Albany & Salem R.R. Co. v. Peterson*, 14 Ind. 112 (1860); *Hougan v. Milwaukee & St. Paul Ry. Co.*, 35 Iowa 558 (1872); *Nourse v. Andrews*, 255 S.W. 84, 86 (Ky. 1923); *Chase v. Silverstone*, 62 Me. 175, 183–84 (1873); *Upjohn*, 9 N.W. at 845; *Ryan v. Quinlan*, 124 P. 512, 516 (Mont. 1912); *Beatrice Gas Co. v. Thomas*, 59 N.W. 925, 927–28 (Neb. 1894); *Mosier v. Caldwell*, 7 Nev. 363 (1872); *Bloodgood v. Ayers*, 15 N.E. 433 (N.Y. 1888); *Ellis v. Duncan*, 21 Barb. 230, 235 (N.Y. Gen. Term 1855); *Frazier v. Brown*, 12 Ohio St. 294

after Edwin Drake's 1858 oil strike, plaintiffs brought cases dealing with the extraction of oil and natural gas from a common pool, and courts reached the same result.²⁵ In case after case, courts “[f]aced

(1861); *Wheatley v. Baugh*, 25 Pa. 528, 528 (1855); *Houston & T. C. Ry. Co. v. East*, 81 S.W. 279 (Tex. 1904); *Crescent Mining Co. v. Silver King Mining Co.*, 54 P. 244 (Utah 1898); *Chatfield*, 28 Vt. 49; *Miller v. Black Rock Springs Imp. Co.*, 40 S.E. 27 (Va. 1901); *Pence v. Carney*, 52 S.E. 702, 706 (W. Va. 1905). Ohio reversed the broad *Frazier v. Brown* interpretation of the *Acton* rule in 1984. *See Cline v. Am. Aggregates Corp.*, 474 N.E.2d 324 (Ohio 1984). Utah altered the result in *Crescent Mining Co.* by statute. *See Riordan v. Westwood*, 203 P.2d 922, 923 (Utah 1949); Utah Code Ann. § 73-1-3 (Lexis Nexis 2012).

Several states adopted a reasonableness regime at the outset without ever holding subsurface water injuries are generally *damnum absque injuria*. *Cason v. Fla. Power Co.*, 76 So. 535 (Fla. 1917) (noting interferences are not actionable when they are reasonable); *Bassett v. Salisbury Mfg. Co.*, 43 N.H. 569, 577 (1862) (restricting “each to a reasonable exercise of his own right, a reasonable use of his own property, in view of the similar rights of others” because “[t]he rights of each land-owner being similar, and his enjoyment dependent upon the action of the other land-owners, these rights must be valueless unless exercised with reference to each other”); *Meeker v. City of E. Orange*, 74 A. 379 (N.J. 1909) (rejecting the “English rule” of property in underground resources and adopting the “reasonable user” doctrine). As most jurisdictions that follow *Acton* provide for actions against unreasonable users of subsurface resource pools, the difference in the *Acton* rejecting jurisdictions is not clear. The West Virginia Supreme Court of Appeals in adopting the reasonableness regime stated that it “constitutes . . . a qualification of the early rule [rather] than an announcement of a new rule.” *Pence*, 52 S.E. at 706. Accordingly, the states that adopted the reasonableness regime at the outset, like West Virginia, arguably in one stroke adopted the rule of *Acton* and then qualified it, or perhaps adopted two rules that are not actually in conflict with one another. *See discussion infra* Part II.B.

25. *People's Gas Co. v. Tyner*, 31 N.E. 59, 60 (Ind. 1892) (“So far as this suit seeks to enjoin the appellants from exploding nitroglycerin in their gas well, upon the ground that it will increase the flow of the gas to the injury of the appellee, it cannot, in our opinion, be sustained.”); *Kelly v. Ohio Oil Co.*, 49 N.E. 399, 401 (Ohio 1897); *Gruger v. Phillips Petroleum Co.*, 135 P.2d 485, 488–89 (Okla. 1943) (affirming dismissal of action seeking compensation for oil withdrawn from beneath plaintiff's land); *Elliff v. Texon Drilling Co.*, 210 S.W.2d 558, 562 (Tex. 1948) (holding landowners may “appropriate the oil and gas that have flowed from adjacent lands without the consent of the owner of those lands, and without incurring liability to him for drainage”); *Powers v. Union Drilling, Inc.*, 461 S.E.2d 844 (W. Va. 1995) (holding drainage of oil and gas not actionable at common law). Surprisingly, the Texas Supreme Court had no occasion to apply *Acton* to oil and gas until decades after the adoption of Texas's statutory regime for regulating oil and gas. 210 S.W.2d 558. The court had only observed that the rule applied in earlier cases not dealing with disputes between neighbors. *See, e.g., Brown v. Humble Oil & Ref. Co.*, 83 S.W.2d 935, 940 (Tex. 1935) (“The common law recognizes no well spacing regulations. At

with the prospect of a resource [they] could not see and [industrial] activities with widespread affects” felt themselves incapable of resolving the disputes and providing meaningful redress and accordingly held interferences *damnum absque injuria*.²⁶

common law the landowner can drill an unlimited number of wells for oil and gas upon his land. . . . The adjoining landowner cannot complain if wells are drilled near his boundary line. Under this rule the only way the landowner can protect himself is to drill offset wells.”); *Stephens Cnty. v. Mid-Kan. Oil & Gas Co.*, 254 S.W. 290, 292 (Tex. 1923) (“Ultimate injury from the net results of drainage, where proper diligence is used, is altogether too conjectural to form the basis for the denial of a right of property in that which is not only plainly as much realty as any other part of the earth’s contents, but realty of the highest value to mankind . . .”). Many oil and gas producing states have no cases applying *Acton* to oil and gas, probably due to the enactment of regulatory regimes before state supreme courts had occasion to address the issue in a purely common law fashion. This includes Idaho, Nebraska, North Dakota, and Wyoming. As for Pennsylvania, see *infra* text accompanying notes 67–71 and 90–108. As for Kentucky, see *infra* text accompanying notes 41–54 and 75. As for Indiana, see *infra* text accompanying notes 76–81.

26. *Cheren*, *supra* note 13, at 593. This feeling, arising due to the hidden character of subsurface resources, led courts not only to limit actions for nuisance, but to adopt limiting constructions of servitudes as well. For example, one decision narrowly interpreted a conveyance that included right to draw water in the amount “now used” from a particular well so as to not make actionable the subsequent construction of another well that diminished the water in the well described in the conveyance below the amount suggested by the words “as now used.” *Davis v. Spaulding*, 32 N.E. 650, 650 (Mass. 1892). The court observed:

It is impossible to know in what direction percolating water finds its way into a well; perhaps only through the bottom of the excavation, and perhaps through the surrounding as well as the subjacent land. Its ways of approach, and its amount, vary with the operation of obscure natural causes, not controllable by the owner of the land through which it passes. If the grant of such a well, or of the privilege of drawing water from it, were held to impose an obligation upon all the land from which the well might derive a supply of water, the burden would be very indefinite, uncertain, and shifting, and would tend, without any adequate corresponding benefit, to prevent the improvement of land by buildings, and its use for mining, quarrying, and many other useful purposes. . . . An intention to subject a large territory to such a burden for the benefit of a single house lot is not to be lightly presumed.

Id. at 652. Samuel Hamilton, one of John Steinbeck’s great heroes, seems to know something that the court did not:

He dismounted, handed his reins to Adam, and untied his forked wand. He took the forks in his two hands and walked slowly, his arms out and stretched before him and the wand tip up. His steps took a zigzag course. Once he frowned and backed up a

The only instances in which *damnum absque injuria* was not applied to underground interferences with water supplies were instances in which the interference itself became visible. Thus, some courts created a cause of action for interference with rights in a common pool when the subsurface water was polluted.²⁷ This relaxation of the *damnum* approach is quite sensible because the presence of pollutants removes the hidden character of subsurface resource pools. When an unnatural pollutant traceable to a surface activity is found in a well, judges face no incapacity to trace cause and effect, determine liability, and afford a remedy by injunction.

Other courts refused to apply the *damnum* approach to interferences with so-called percolating waters, as opposed to “[u]nderground currents of water, flowing in defined channels,” though this result seems to conflict with the spirit of *Acton* itself.²⁸ This may be justified in that so-called subsurface streams are by their nature not so hidden as to limit judicial capacity.²⁹ Indeed, many courts that recognize a

few steps, then shook his head and went on. Adam rode slowly along behind, leading the other horse.

Adam kept his eyes on the stick. He saw it quiver and then jerk a little, as though an invisible fish were tugging at a line. Samuel’s face was taut with attention. He continued on until the point of the wand seemed to be pulled strongly downward against his straining arms. He made a slow circle, broke off a piece of sagebrush, and dropped it on the ground. He moved well outside his circle, held up his stick again, and moved inward toward his marker. As he came near it, the point of the stick was drawn down again. Samuel sighed and relaxed and dropped his wand on the ground. “I can get water here,” he said. “And not very deep. The pull was strong, plenty of water.”

“Good,” said Adam.

JOHN STEINBECK, *EAST OF EDEN* 165 (Viking 2003) (1952).

27. *Swift & Co. v. Peoples Coal & Oil Co.*, 186 A. 629, 632 (Conn. 1936); *Beatrice*, 59 N.W. at 927–28; *Branch v. W. Petroleum, Inc.*, 657 P.2d 267, 274 (Utah 1982).
28. *Hanson v. McCue*, 42 Cal. 303, 308 (1871); *Tampa Waterworks Co. v. Cline*, 20 So. 780, 783 (Fla. 1896); *Willis v. City of Perry*, 60 N.W. 727, 729 (Iowa 1894); *Maddocks v. Giles*, 728 A.2d 150 (Me. 1999); *Bloodgood*, 15 N.E. at 434; *Wheatley*, 25 Pa. at 531; *Logan Gas Co. v. Glasgow*, 170 N.E. 874, 876 (Ohio 1930); *Canada v. City of Shawnee*, 64 P.2d 694, 699 (Okla. 1937); *Clinchfield Coal Corp. v. Compton*, 139 S.E. 308, 311 (Va. 1927).
29. *See Wheatley*, 25 Pa. at 532 (“When the filtrations are gathered into sufficient volume to have an appreciable value, and to flow in a clearly defined channel, it is generally possible to see it, and to avoid diverting it without serious detriment to the owner of the land through which it flows.”); *Haldeman v. Bruckhardt*, 45 Pa. 514, 521 (1863) (“The defined watercourses [discussed in *Wheatley*] which a man may not divert to the hurt of an inferior proprietor, are not the hidden streams of which the

distinction between percolating waters and water flowing in defined channels limit this recognition to cases in which the existence and nature of the water course is known to or determinable by the defendant from above ground before engaging in the conduct plaintiff complains of.

Contrary to the *ferae naturae* view, courts did not mention the law of wild animals in reaching these results, which were based simply on the court's inability to accurately know how surface activities were affecting the common pool. The case most often cited as the origin of the rule of capture and the *ferae naturae* analogy, *Westmoreland & Cambria Natural Gas Co. v. DeWitt*, had nothing to do with the diversion of a common pool resource from one surface owner to another.³⁰ That case, although often quoted by commentators who advance the capture theory, involved a dispute between two lessors of the mineral rights to the same piece of land, and the court had to determine whether the first lessor had rights that were superior to the rights of the second lessor. The court held in favor of the first lessor, even though the first lessor did not have possession of the gas itself. The court's reference to wild animals was not to justify its holding (which was based on the notion that the surface owner had rights in the common pool even before the resources were extracted) but to contrast the situation when rival claimants to the same right had to have possession (capture) before they could enforce their rights.³¹ The

owner of the soil through which they pass can have no knowledge until they have been discovered by excavations made in the exercise of his rights of property. There are known streams to which, if the lower proprietor has any rights, they are perceptible, and require no sub-surface exploration before their course can be defined.”).

30. See, e.g., *DUKEMINIER ET AL.*, *supra* note 2, at 36 (“The resources, one early case said, ‘may be classed by themselves, if the analogy be not too fanciful, as minerals *ferae naturae*. In common with animals, and unlike other minerals, they have the power and the tendency to escape without the volition of the owner. . . . They belong to the owner of the land, and are part of it, so long as they are on or in it, and are subject to his control; but when they escape, and go into other land, or come under another’s control, the title of the former owner is gone. Possession of the land, therefore, is not necessarily possession of the gas. If an adjoining, or even a distant, owner, drills his own land, and taps your gas, so that it comes into his well and under his control, it is no longer yours, but his.’”) (quoting *Westmoreland & Cambria Nat. Gas Co. v. DeWitt*, 18 A. 724, 725 (Pa. 1889) (alteration in original)).
31. The holding in *Westmoreland* is only that drilling leases are enforceable in equity. A landowner leased a parcel “for the sole and only purpose of drilling and operating wells” to one party and subsequently leased the land to others who intended to drill and operate wells. 18 A. at 724. The original lessor sought an injunction but was denied by the lower court on the grounds that the lessor did not have possession of property sufficient to entitle the lessor to the equitable remedy of an injunction. Thus, the lessor would only be able to pursue a case at law for damages. *Id.* The

other prominent references to wild animals in oil and gas cases, those determining the constitutionality of oil and gas regulations, pointedly contradict the view that courts treated subsurface resource pools as commons property.³²

Contrary to the *ad coelum* view, common law courts did not hold that draining resources from underneath a neighbor's land is privileged. The invocation of *damnum absque injuria* does not privilege *exploitation* but rather renders *interference* judicially noncognizable. In *Acton* and the American cases that followed, the activities that negatively affected subsurface resources were not limited to extraction from the same subsurface pool.³³

Pennsylvania Supreme Court reversed and held that the lessor did have sufficient possession to support equitable remedies because the lessor had drilled a well and had the immediate ability to remove gas. The court analogized subsurface resource pools to wild animals only for the limited proposition that the degree of possession required to entitle the holder of an interest in water, oil, and gas to equitable remedies was less than the degree required if the resource were solid minerals. *Id.* at 725.

32. See discussion *infra* Part III (showing Supreme Court recognition that oil and gas are, unlike wild animals, not commons property for constitutional purposes).
33. *Brown & Bros. v. Illius*, 27 Conn. 84, 94 (1858) (holding pollution of well caused by the transmission of pollutants produced in the course of industrial manufacturing by way of subsurface currents and streams *damnum absque injuria* because “plaintiffs could no more complain of the inconvenience to them” caused thereby “than they could if the defendant had dug a well on his own land and thereby dried up a well on that of the plaintiffs”), *overruled in part by* *Swift & Co. v. Peoples Coal & Oil Co.*, 186 A. 629 (Conn. 1936) (finding an exception to the holding of *Brown & Bros.* for pollutants transmitted by percolating waters as opposed to subsurface currents and streams and overruling the distinction, effectively holding subsurface transmission of pollutants by any means is no longer *damnum absque injuria.*); *United Fuel Gas Co. v. Sawyers*, 259 S.W.2d 466, 467 (Ky. 1953) (reversing judgment of “damages for the contamination of a water well charged to have been caused by a nearby gas well” because the injury is *damnum absque injuria*); *Upjohn v. Bd. of Health*, 9 N.W. 845, 848 (Mich. 1881) (holding corruption of subsurface water caused by burial of the dead not actionable); *Logan Gas*, 170 N.E. at 876 (holding drying up of stream caused by drilling of gas well *damnum absque injuria*); *Rose v. Socony-Vacuum Corp.*, 173 A. 627, 632 (R.I. 1934) (holding “contamination of percolating waters” by the operation of neighboring refinery was *damnum absque injuria*), *abrogated by* *Splendorio v. Bilray Demolition Co., Inc.*, 682 A.2d 461 (R.I. 1996); *Couch v. Clinchfield Coal Corp.*, 139 S.E. 314, 316 (Va. 1927) (holding drying up of well caused by collapse of neighbor's mine *damnum absque injuria*); *Chatfield v. Wilson*, 28 Vt. 49 (1855) (holding diminishment of percolating water following into reservoir caused by the diversion of brook *damnum absque injuria*).

Furthermore, injuries to enjoyment of surface water suffered when a neighbor drained subsurface water have been held not *damnum absque injuria*.³⁴ Flooding neighboring land is actionable even if the water crosses the property line below ground.³⁵ And courts that have gone astray and held exploitation of subsurface resource pools privileged have reached unjustifiable results.³⁶ The *damnum absque injuria* result is predicated on the notion that if one's activities interfered with another's use of a subsurface resource pool, all or nearly all of the chain of cause and effect of the interference (that is, the injury) is hidden from observation. This predicate is based on the nature of the interfered-with resource not the complained-of activity. Thus, the common law did not protect any and all *exploitation* of subsurface resource pools; rather it limited recognition of causes of actions claiming *interference* with subsurface resource pools hidden from view.

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34. *City of Emporia v. Soden*, 25 Kan. 588, 612 (1881) (holding that a city must compensate a mill owner for the loss of natural surface stream flow caused by the city digging a percolation-fed well on nearby land); *Strait v. Brown*, 16 Nev. 317, 321 (1881) (holding actionable the diminishment of a creek caused by diversion of the creek's source, a spring, even though the creek received water "by some subterranean means"); *Smith v. City of Brooklyn*, 54 N.E. 787, 788 (N.Y. 1899) ("That the diversion and diminution of the [surface] stream were caused by arresting and collecting the underground waters, which, percolating through the earth, fed the stream, does not affect the question."). *But see* *Ellis v. Duncan*, 21 Barb. 230, 235 (N.Y. Gen. Term 1855) (holding that the damage resulting from "the interruption of the sub-surface supplies of a stream . . . is not the subject of legal redress"); *Miller v. Black Rock Springs Imp. Co.*, 40 S.E. 27, 31 (Va. 1901) (holding interception and diversion of subsurface source of neighbor's stream *damnum absque injuria*).
35. *Pixley v. Clark*, 35 N.Y. 520 (1866) (holding defendant liable for flooding his neighbor's land by damming an adjacent surface stream, even though the flooding occurred via percolation through the soil rather than the overflow of natural banks).
36. *See* *Finley v. Teeter Stone, Inc.*, 248 A.2d 106, 116 (Md. 1968) (holding threats to subsidence of land caused by neighboring extraction of subsurface water not actionable); *see also* discussion *infra* Part II.

C. *Responses to the Migratory Nature of Subsurface Resource Pools: Malicious Interference, Waste, and Unreasonable Exploitation*

Although an action for interference with rights in subsurface resource pools could not be maintained because the resources were hidden, the migratory character of subsurface resource pools led common law courts to recognize causes of action that coordinated the decision making of those exploiting the same subsurface resource pool. The common law courts recognized actions for (1) malicious interference, (2) waste, and (3) unreasonable exploitation. The recognition of these causes of actions reflect the shared nature of subsurface resource pools. These actions coordinate the activities of surface owners that impact the shared resource, and this judicial coordination exemplifies the shared property paradigm. This Section summarizes the common law recognition of these actions and their grounding in the migratory character of subsurface resource pools. The import of these common law rules, as well as their relationship with the *Acton*-type decisions discussed in the previous section, is discussed in Part II.

The prohibitions against malicious interference, waste, and unreasonable exploitation of subsurface resource pools require reasonable behavior by those with a shared interest in the resource. The first two obligations give rise to a cause of action and a remedy whenever they are found to exist. The determination that the action is unreasonable is built into the concept of malicious interference or waste, and liability for waste and malicious interference is not dependent on local circumstances.³⁷ Unreasonable exploitation, the third category of actionable conduct, encompasses decisions that are actionable only if they are determined to be unreasonable under all the circumstances of the particular subsurface resource pool. The obligations to avoid malicious interference and waste are often codified in statute and are applied more uniformly by states than the prohibition on unreasonable exploitation. In many jurisdictions, there are further variations in the treatment of water as opposed to oil and gas.³⁸ Waste and malicious interference are actionable in nearly every state and for all three subsurface pooled resources—water, oil, and gas.

37. The impossibility of reasonable waste under the common law is the result of the technical definition of common law waste. Waste could be defined as any instance of less than full utilization, but this is not how it is defined under the common law. Rather, waste is dissipation without any utilization at all. Thus, properly considered, the statutory prohibitions on obtaining oil without capturing natural gas emanating from the wellhead are not common law waste restrictions but are better classified under the category of unreasonable exploitation.

38. The most significant variation is that the sale of water outside of the locality may constitute unreasonable exploitation even if the sale of oil and gas outside of the locality would not be.

1. Malicious Interference with Subsurface Resource Pools

Courts recognize a cause of action for malicious interference with subsurface resource pools because the migratory character of subsurface resources means that one surface owner can too easily impair another surface owner's ability to enjoy the pool.³⁹ Malicious interference is any action with the unjustified purpose and effect of reducing another's enjoyment of a subsurface resource pool.⁴⁰

For example, in the course of its lengthy legal and competitive rivalry with the Kentucky Heating Company, the Louisville Gas Co., through its agents, formed the Calor Oil & Gas Company and had it acquire several gas leases in the field that supplied the Kentucky Heating Company. As the court said, "[O]ne of their objects in getting the leases and organizing the Calor Oil & Gas Company was to interfere with the supply of [Kentucky Heating Company], and thus cripple it as a rival of the Louisville Gas Company."⁴¹ To this end, the Calor Oil & Gas Company drilled several producing gas wells on its leases in the field.⁴² As the aim was simply to exhaust the Kentucky Heating Company's supply of gas, the Calor Oil & Gas Company might simply have flared the gas at the wellhead, but this strategy was foreclosed by a Kentucky statute forbidding the waste of natural gas.⁴³ Accordingly, Calor Oil & Gas Company constructed a lampblack factory that, because gas is burned to produce lampblack, provided a defense for the burning of the gas.⁴⁴ The putative lampblack factory

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39. *See Chesley v. King*, 74 Me. 164, 177 (1882) (holding that allegations of "digging of a well . . . 'for the mere, sole and malicious purpose' of cutting off the sources of the spring and injuring the plaintiff, and not for the improvement of his own estate" are actionable but not borne out by the evidence); *Gagnon v. French Lick Springs Hotel Co.*, 72 N.E. 849, 852 (Ind. 1904) (holding spite water well and pump actionable); *Louisville Gas Co. v. Ky. Heating Co.* (*Louisville Gas I*), 77 S.W. 368, 369–70 (Ky. 1903) (owner of the soil "cannot be allowed deliberately to waste the supply for the purpose of injuring his neighbor. . . . Every owner may bore for gas on his own ground, and may make a reasonable use of it; but he may not wantonly injure or destroy the reservoir common to him and his neighbor").
40. This definition distinguishes causes of action for activities that have no other effect than to reduce the enjoyment of a subsurface resource pool without any finding or allegation of malicious intent. In some of these cases, the action is clearly undertaken with such a purpose, but the court declines, for prudential reasons or otherwise, to inquire into the motives of the actor while nevertheless finding the action unlawful.
41. *Louisville Gas I*, 77 S.W. at 369.
42. *Id.*
43. KY. STAT. §§ 3910–14 (Barbour & Carroll 1894); *see Commonwealth v. Trent*, 77 S.W. 390 (Ky. 1903) (discussing the waste statute).
44. *Louisville Gas I*, 77 S.W. at 369.

was protected by a twelve-foot-high fence and armed guards who frequently discharged firearms to “deter the neighbors from coming about.”⁴⁵ Run by a lawyer who “knew nothing of the manufacture of lampblack,” the factory produced “300 pounds of lampblack, worth 4 cents a pound” in five months of operation while at the same time burning 90 million cubic feet of natural gas.⁴⁶

The operation achieved its intended effect of diminishing the Kentucky Heating Company’s supply: the gas pressure in the field was reduced from sixty pounds to thirty pounds.⁴⁷ The Kentucky Heating Company brought suit to enjoin the intentional disruption of its exploitation of the gas field, and this litigation produced two decisions by the Kentucky Court of Appeals.⁴⁸ In the first decision the court affirmed an injunction against the malicious interference:

[T]he common law affords an ample remedy for a wrong like this. While natural gas is not subject to absolute ownership, the owner of the soil must, in dealing with it, use his own property with due regard to the rights of his neighbor. He cannot be allowed deliberately to waste the supply for the purpose of injuring his neighbor. . . . The gas under the ground may go wherever it will, but the defendants cannot be allowed to draw off the gas from under the plaintiff’s lands simply for the purpose of injuring it, for the plaintiff’s lands are thus clandestinely sapped, and their value impaired. These principles have often been applied in the case of underground waters, and we see no reason why the same rule should not apply to natural gas. . . . The doctrine that an act which is legal in itself, and violates no legal right, cannot be made actionable on account of the motive which induced it, has no application, because the acts of the defendants in wasting the gas violated the plaintiff’s legal rights. Both the parties drew gas from the same reservoir. It was incumbent on each to exercise his right so as not to injure the other unnecessarily. If one wasted all of the gas from the reservoir, there would be nothing left for the other. Every owner may bore for gas on his own ground, and may make a reasonable use of it; but he may not wantonly injure or destroy the reservoir common to him and his neighbor.⁴⁹

45. *Id.*

46. *Id.*

47. *Id.*

48. *Id.* at 370 (affirming injunction against the operation of the lampblack factory); *Louisville Gas Co. v. Ky. Heating Co. (Louisville Gas II)*, 111 S.W. 374, 375 (K.Y. 1908) (determining the proper calculation of damages for the malicious interference). The Kentucky Court of Appeals was the highest court in Kentucky prior to 1976.

49. *Louisville Gas I*, 77 S.W. at 369–70.

In the second decision the court considered the proper calculation of damages for the malicious interference and once again set out the legal obligations between surface owners:

The right of the surface owners to take gas from subjacent fields or reservoirs is a right in common. There is no property in the gas until it is taken. Before it is taken it is fugitive in its nature, and belongs in common to the owners of the surface. The right of the owners to take it is without stint; the only limitation being that it must be taken for a lawful purpose and in a reasonable manner. Each tenant in common is restricted to a reasonable use of this right, and each is entitled to the natural flow of the gas from the subjacent fields, and any unlawful exercise of this right, by any tenant in common, which results in injury to the natural right of any other tenant or surface owner, is an actionable wrong.⁵⁰

In this pair of decisions, the court's recognition of an action for malicious interference was grounded in the migratory character of subsurface natural gas. In the first, the court noted that "gas under the ground may go wherever it will" and if one surface owner "wasted all of the gas from the reservoir, there would be nothing left for the other."⁵¹ And in the second the court noted that gas underground "is fugitive in nature" and that surface owners exploit the "natural flow of the gas from subjacent fields."⁵² Under these circumstances, the court held that surface owners "may not wantonly injure or destroy the reservoir common to him and his neighbor"⁵³ and a surface owner's unlawful exercise of the right to exploit gas that "results in

50. *Louisville Gas II*, 111 S.W. at 376. As to the calculation of damages, the court explained:

The damage sustained is only that which results from an improper interference with the natural flow of the gas in the wells and pipes of another. It is not the value of the gas at the point of distribution, or at any point where it enters artificial conduits, but the value in money for the diminution of the natural flow of the gas at the wells, directly and independently of all other causes attributable to the wrongs complained of. In other words, the measure of damages is the difference in money, at the point where taken, between the value of the natural flow and that of the diminished flow, directly and independently of all other causes, attributable to the wrong.

Id. at 376–77. The court also affirmed that punitive damages may be awarded. *Id.* at 377.

51. *Louisville Gas I*, 77 S.W. at 369–70.

52. *Louisville Gas II*, 111 S.W. at 376.

53. *Louisville Gas I*, 77 S.W. at 370.

injury to the natural right of any other tenant or surface owner, is an actionable wrong.”⁵⁴

While true malicious interference cases are rare, many of the state supreme courts that have not heard such cases have recognized a cause of action for malicious interference.⁵⁵

2. Waste of Subsurface Resource Pools

Common law courts also held that, because of the migratory nature of subsurface resource pools, one surface owner could sue another surface owner for waste.⁵⁶ Common law waste of subsurface

54. *Louisville Gas II*, 111 S.W. at 376.

55. *Higgins Oil & Fuel Co. v. Guar. Oil Co.*, 82 So. 206, 210, 211 (La. 1919) (observing under civil law that “[o]n the point of an owner not being allowed through pure spite or wantonness to do something on his property injurious to his neighbor, we find but one dissenting voice among the French law-writers and decisions” and quoting other French law-writers for the proposition that “[i]f it is found that an owner who has dug his soil has been prompted in doing so simply by the desire to injure his neighbor, the court can abate what has been done” (citation omitted)); *Finley v. Teeter Stone, Inc.*, 248 A.2d 106, 115 (Md. 1968) (declining to decide whether malicious interference with subsurface water is actionable because there was no “contention or proof . . . that there was . . . malice”); *Swett v. Cutts*, 50 N.H. 439, 447 (1870) (“[E]xcavations maliciously made in one’s own land, with a view to destroy a spring or well in his neighbor’s land, could not be regarded as reasonable; and there would be much ground for holding that if the spring or well in his neighbor’s land could be preserved without material detriment to the land owner making such excavations, it would be evidence of malice, or such negligence as to be equivalent to malice.”); *Hague v. Wheeler*, 27 A. 714, 718 (Pa. 1893) (noting plaintiffs could not “complain of the defendants for the act of drilling the well on their land on any other ground than the existence of malice or negligence”); *Wheatley v. Baugh*, 25 Pa. 528, 533 (1855) (“Neither the civil law nor the common law permits a man to be deprived of a well or spring or stream of water for the mere gratification of malice.”); *Rose v. Socony-Vacuum Corp.*, 173 A. 627, 630 (R.I. 1934) (noting landowner can “appropriate to its own use the percolating waters under its soil, providing that in so doing it was not actuated by an improper motive”); *City of Corpus Christi v. City of Pleasanton*, 276 S.W.2d 798, 801 (Tex. 1955) (noting common law limitation that a surface owner “may not maliciously take water for the sole purpose of injuring his neighbor”).

56. *McCoy v. Ark. Natural Gas Co.*, 165 So. 632, 634 (La. 1936) (reversing dismissal of negligent waste of gas complaint because plaintiff’s complaint alleged the waste diminished the market value of the land); *Higgins*, 82 S. at 212 (holding under civil law that the refusal to plug an abandoned well may be an actionable nuisance); *Stillwater Water Co. v. Farmer*, 93 N.W. 907, 910 (Minn. 1903) (holding the digging of a trench that has no function other than to divert percolating waters into a city sewer constitutes actionable waste regardless of the trench digger’s intent); *Elliff v. Texon Drilling Co.*, 210 S.W.2d 558, 563 (Tex. 1948) (holding “the negligent waste and destruction of petitioners’ gas and distillate was neither a legitimate drainage of the minerals from beneath

resource pools is any unreasonable act or refusal to act that unjustifiably exhausts the subsurface resource pool.

In *Elliff v. Texon Drilling Co.*, the Texas Supreme Court recognized a cause of action for negligent waste of oil.⁵⁷ Mabel, Frank, and Charles Elliff owned half the surface land above a “huge reservoir of gas and distillate,” and Clara Driscoll owned the remainder.⁵⁸ The Elliffs leased their land and had one producing well. Driscoll engaged Texon Drilling to drill 466 feet east of the Elliff property. Unfortunately for all concerned, the Driscoll well “blew out, caught fire and cratered” because the Texon Drilling failed to use “drilling mud of sufficient weight,” causing “huge quantities of gas, distillate and some oil [to be] blown into the air, dissipating large quantities from the reservoir.”⁵⁹ Over time, the “opening in the ground . . . gradually increased until it enveloped and destroyed” the Elliffs’ well, which accordingly “blew out, cratered, caught fire and burned for several years.”⁶⁰ Justifiably incensed, the Elliffs sued and obtained a verdict for “\$154,518.19, which included \$148,548.19 for the gas and distillate, and \$5970 for damages to the land and cattle.”⁶¹ The Court of Civil Appeals overturned the verdict on the ground that the majority of the lost gas and distillate first drained across the property line and then escaped through the blown out well on Driscoll’s land.⁶²

The Texas Supreme Court reversed. The court noted at the outset the migratory character of oil and gas: “[T]hese minerals will migrate across property lines towards any low pressure area created by production from the common pool.”⁶³ The court agreed with the lower court that drainage of oil and gas does not generally give rise to a cause of action.⁶⁴ But “[e]ach owner whose land overlies the basin has a like interest, and each must of necessity exercise his rights with some regard to the rights of others.”⁶⁵ Accordingly, “under the common law, and independent of the conservation statutes,” surface owners are

their lands nor a lawful or reasonable appropriation of them” and was therefore actionable).

57. *Elliff*, 210 S.W.2d at 562.

58. *Id.* at 559.

59. *Id.* at 559–60.

60. *Id.* at 559.

61. *Id.* at 560.

62. *Texon Drilling Co. v. Elliff*, 210 S.W.2d 553 (Tex. Civ. App. 1947), *rev’d*, 210 S.W.2d 558.

63. *Elliff*, 210 S.W. at 561 (Tex. Sup. Ct.).

64. *Id.* at 562 (“[T]here is no liability for reasonable and legitimate drainage from the common pool.”).

65. *Id.*

“legally bound to use due care to avoid the negligent waste or destruction of the minerals imbedded in [neighboring] oil and gas-bearing strata.”⁶⁶

Similarly, Pennsylvania recognizes a cause of action for waste of the subsurface resource pools that results from negligence.⁶⁷ In *Hague v. Wheeler*, two landowners who were recovering and marketing gas from a subsurface pool sought and received an injunction from a lower court against a third landowner who had tapped the pool, preventing the third landowner from releasing the gas into the air.⁶⁸ The third landowner had been unable to market the gas while the other two were successfully doing so.⁶⁹ Releasing the gas “reduce[d] ultimately the flow of gas from” the other two landowners’ wells.⁷⁰ The landowners claimed that releasing rather than capturing the gas unreasonably harmed them by diminishing the productivity of their own wells without any offsetting benefit to the landowner who released the gas into the air; he released the gas only to get leverage over the other two landowners (the bill averred the third landowner had threatened to release the gas unless he received payment from the other two landowners). The Pennsylvania Supreme Court reversed the lower court’s grant of an injunction and held that venting gas could not constitute an actionable nuisance simply because it diminished a common pool without benefiting the venting land owner, it did so because it found from the circumstances of the case that the gas was vented in “good faith” and not “with malice, or in negligence.”⁷¹

Common law waste cases are rare (albeit less rare than malicious interference cases) in part because many states statutorily prohibit waste of subsurface resource pools.⁷² Some state supreme courts that

66. *Id.* at 563.

67. *See Hague v. Wheeler*, 27 A. 714, 719–20 (Pa. 1893).

68. *Id.* at 718.

69. *Id.* at 718–19.

70. *Id.* at 719.

71. *Id.* at 718.

72. The following state statutes prohibit the waste of both oil and gas unless otherwise noted: ALA. CODE § 9-17-11 (2001); ALASKA STAT. § 31.05.095 (2012); ARIZ. REV. STAT. ANN. § 27-503 (2000); ARK. CODE ANN. § 15-72-105 (2009); CAL. PUB. RES. CODE §§ 3300, 3500 (West 2001) (gas); COLO. REV. STAT. § 34-60-107 (2012); FLA. STAT. § 377.20 (2012); GA. CODE ANN. § 12-4-53 (2012); IDAHO CODE ANN. § 47-316 (2003); 225 ILL. COMP. STAT. ANN. 725 / 1.1 (West 2007); IOWA CODE § 458A.3 (2013); KAN. STAT. ANN. § 55-601 (2005) (oil); KY. REV. STAT. ANN. § 353.520 (West 2011); LA. REV. STAT. ANN. § 30:2 (2007); MICH. COMP. LAWS ANN. § 324.61504 (West 1999); MISS. CODE ANN. § 53-3-3; MO. REV. STAT. § 259.060 (2000); MONT. CODE ANN. § 82-11-121 (2011); N.M. STAT. ANN. § 70-2-2 (1995); N.Y. ENVTL. CONSERV. LAW § 71-1305 (McKinney 1997); N.C. GEN. STAT.

have not been faced with waste cases have indicated that they would recognize a common law action for waste if the appropriate case came before them.⁷³

3. Unreasonable Exploitation of Subsurface Resource Pools

Finally, because subsurface resource pools are migratory, common law courts have recognized a cause of action for unreasonable exploitation of subsurface resource pools.⁷⁴ Courts have recognized

§ 113-390 (2011); N.D. CENT. CODE § 38-08-03 (2004); OHIO REV. CODE ANN. § 1509.20 (West 2012) (requiring “every reasonable precaution in accordance with the most approved methods of operation to stop and prevent waste of oil or gas”); OKLA. STAT. ANN. tit. 52, §§ 236, 271 (West 2011); 58 PA. CONS. STAT. ANN. § 404 (West 1996); TEX. NAT. RES. CODE ANN. § 85.045 (West 2011); UTAH CODE ANN. § 40-6-3 (LexisNexis 2010); VT. STAT. ANN. tit. 29 § 521 (2008); WASH. REV. CODE § 78.52.130 (2012) (same); WYO. STAT. ANN. § 30-5-102 (2011).

73. *See, e.g.,* *Finley v. Teeter Stone, Inc.*, 248 A.2d 106, 115 (Md. 1968) (declining to decide whether waste of subsurface water is actionable because there was “no contention or proof . . . that there was . . . waste”); *Village of Delhi v. Youmans*, 50 Barb. 316, 320 (N.Y. Gen. Term 1867) (Boardman, J.) (“No person can wantonly and maliciously cut off on his own land the underground supply of a neighbors’ spring or well without any purpose of usefulness to himself.”).
74. *Katz v. Walkinshaw*, 74 P. 766, 771 (Cal. 1903) (“The doctrine of reasonable use . . . affords some measure of protection to property now existing, and greater justification for the attempt to make new developments. It limits the right of others to such amount of water as may be necessary for some useful purpose in connection with the land from which it is taken.”); *Alphonzo E. Bell Corp. v. Bell View Oil Syndicate*, 76 P.2d 167, 174 (Cal. Dist. Ct. App. 1938) (“The common supply, or common right, or correlative right is expressly limited to the right of each individual surface owner to take from the oil strata lying beneath his properties, oil, gas, and other hydrocarbons intercepted by wells sunk beneath his own property, in such a manner as not to commit waste.”); *Cason v. Fla. Power Co.*, 76 So. 535, 536 (Fla. 1917) (“[E]ach landowner is restricted to a reasonable use of his property as it affects subsurface waters passing to or from the land of another.”); *Mfrs.’ Gas & Oil Co. v. Ind. Natural Gas & Oil Co.*, 57 N.E. 912 (Ind. 1900) (holding suit for injunction against the use of a pump and other artificial means to increase the flow of natural gas stated a cause of action); *Schenk v. City of Ann Arbor*, 163 N.W. 109 (Mich. 1917) (affirming damages award for reduction in water supply caused by defendant municipality’s operation of water pump); *Erickson v. Crookston Waterworks, Power & Light Co.*, 111 N.W. 391, 395 (Minn. 1907) (holding actionable the defendant’s use of “artificial force in pumping the basin of supply to a low level,” which “deprive[d] the plaintiff of pure water provided in the natural use of his artesian well” and thereby “indirectly compel[led] him to buy from” the defendant); *Olson v. City of Wahoo*, 248 N.W. 304, 308 (Neb. 1933) (holding “the owner of land . . . cannot extract and appropriate” subterranean waters “in excess of a reasonable and beneficial use upon the land which he

owns, especially if such use is injurious to others who have substantial rights to the waters” and further that “if the natural underground supply is insufficient for all owners, each is entitled to a reasonable proportion of the whole”); *Bassett v. Salisbury Mfg. Co.*, 43 N.H. 569, 577 (1862) (holding “any interference by one land-owner with the natural drainage, injurious to the land of another, and not reasonable, is unjustifiable” and therefore actionable); *Hathorn v. Natural Carbonic Gas Co.*, 87 N.E. 504, 507–08 (N.Y. 1909) (holding use of “pumps and other apparatus for the purpose of accelerating and increasing the flow of subterranean percolating waters and gas through deep wells” may constitute “unreasonable and improper conduct” for which plaintiff has “sufficient cause for appeal to, and relief by, a court of equity”); *Forbell v. City of New York*, 58 N.E. 644 (N.Y. 1900) (holding use of wells and pumping station to withdraw and market large quantities of water thereby lowering the underground water is actionably unreasonable); *Rouse v. City of Kingston*, 123 S.E. 482, 492 (N.C. 1924) (observing “[w]ater is a fluid, mobile, unstable” and affirming judgment for unreasonably withdrawing large quantities of water from deep wells and transmitting by pipe to customers thereby drying up the wells on a neighboring parcel); *Cline v. Am. Aggregates Corp.*, 474 N.E.2d 324, 327 (Ohio 1984) (adopting reasonable use doctrine for “the resolution of ground water conflicts”); *Canada v. City of Shawnee*, 64 P.2d 694, 696 (Okl. 1936) (holding pumping “[e]normous volumes of water . . . from under the lands of the defendant and of plaintiffs” for transport by pipeline to customers thereby drying up “the wells on all of plaintiffs’ lands” actionably unreasonable); *Rothrauff v. Sinking Spring Water Co.*, 14 A.2d 87, 90 (Pa. 1940) (holding “the diversion or sale to others away from the land” of subsurface water that “impairs the supply of a spring or well on the property of another . . . is not for a ‘lawful purpose’ within the general rule concerning percolating waters, but constitutes an actionable wrong for which damages are recoverable”); *Horne v. Utah Oil Ref. Co.*, 202 P. 815, 817–18 (Utah 1921) (holding that pumping large quantities of water from artisanal basin “to be conducted and conveyed away to [defendant’s] oil refinery beyond the boundaries of [the] artesian district, there to be used for commercial and manufacturing purposes” is actionably unreasonable); *Pence v. Carney*, 52 S.E. 702, 706 (W. Va. 1905) (holding “unreasonable and nonbeneficial use” of subsurface water actionable, but pumping and wasting of waters that is “merely temporary, and done in good faith, for the purpose of completing the well for legitimate use” is not unreasonable and nonbeneficial use); *State v. Michels Pipeline Constr., Inc.*, 217 N.W.2d 339, 351 (Wis. 1974) (holding the cause of unreasonable harm through lowering the water table or reducing artesian pressure by withdrawing subsurface water actionable). The opinion in *Katz v. Walkinshaw* notes that its holding might or might not properly be applied to oil in another case. 74 P. at 772–73. The holding in *Alphonzo E. Bell Corp. v. Bell View Oil Syndicate* can also be explained by the doctrine of trespass. 6 P.2d 167. The Maryland Court of Appeals has expressly reserved the unreasonable exploitation question. *Finley*, 248 A.2d at 113–15 (Md. 1968) (declining to decide whether unreasonable exploitation of subsurface water is actionable because a quarrying company’s removal of subsurface water using a pump is not unreasonable and there was “no contention or proof . . . that there was any . . . other unreasonable use”).

actions for unreasonable extraction methods, complete exhaustion of subsurface water, carrying off water from the land from which it is drawn, and sale of water. On the other hand, there are cases that hold or suggest unreasonable exploitation is never actionable, but we argue these decisions and suggestions do not reflect the majority rule.⁷⁵

For example, in *Manufacturers' Gas & Oil Co. v. Indiana Natural Gas & Oil Co.*, suppliers and end users of natural gas withdrawn from a large reservoir sought to enjoin the Indiana Natural Gas & Oil from “using devices for pumping, and from employing any other artificial process or appliance for the purpose, or having the effect of, increasing the natural flow of gas” flowing out of the reservoir through its many wells.⁷⁶ Before this case, there was some indication such an action would not be recognized in Indiana.⁷⁷ The trial court dismissed the action and the court of appeals affirmed.⁷⁸ The Indiana Supreme Court reversed and held unreasonable exploitation is actionable:

Natural gas is a fluid mineral substance, subterraneous in its origin and location. . . . [T]here are reasons why the right to protect it from entire destruction while in the ground should be exercised by the owners of the land who are interested in the common reservoir.

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75. *Barnard v. Monongahela Natural Gas Co.*, 65 A. 801 (Pa. Com. Pl. 1906) (holding location of wells near the property line not actionable), *aff'd per curiam*, 65 A. 801 (Pa. 1907); *Jones v. Forest Oil Co.*, 47 Pitt. L.J. 58 (Pa. Com. Pl. 1899) (holding use of a gas pump which diminished the production of adjoining landowners unless those landowners also employed a gas pump not actionable), *aff'd per curiam*, 44 A. 1074 (Pa. 1900); *Gain v. S. Penn Oil Co.*, 86 S.E. 883, 885 (W. Va. 1915) (implying in dispute between lessor and lessee over location of oil well that landowners may locate oil wells “near the division line”); *United Carbon Co. v. Campbellsville Gas Co.*, 18 S.W.2d. 1110, 1112–14 (Ky. 1929) (abrogating the Kentucky tenancy in common rule with citations to the Summers treatise and the cases it cites, especially *Jones*, by holding the use of compressor privileged without consideration of tenancy in common ownership of the natural gas); *Drinkwine v. State*, 300 A.2d 616, 618 (Vt. 1973) (affirming dismissal of complaint asserting unreasonable exploitation because “no correlative rights exist between adjoining landowners in percolating waters”); *Sipriano v. Great Spring Waters of Am., Inc.*, 1 S.W.3d 75 (Tex. 1999) (refusing to “limit the common-law right of a surface owner to take water from a common reservoir by imposing liability on landowners who ‘unreasonably’ use groundwater to their neighbors’ detriment.”).
76. *Mfrs.' Gas & Oil*, 57 N.E. at 912–13.
77. *People's Gas Co. v. Tyner*, 31 N.E. 59 (Ind. 1892) (affirming grant of a temporary injunction against the use of nitroglycerin to initiate explosions aimed at increasing production not because it would artificially accelerate drainage of oil, as plaintiff had contended, but because the detonations might be hazardous to life and property).
78. *Mfrs.' Gas & Oil*, 57 N.E. at 917 (reversing judgment “with instructions to overrule the demurrer”).

. . . [T]his right ought to reside somewhere, and we are of the opinion that it is held, and may be exercised, by the owners of the land, as well as by the state. Natural gas in the ground is so far the subject of property rights in the owners of the superincumbent lands, that while each of them has the right to bore or mine for it on his own land, and to use such portion of it as, when left to the natural laws of flowage, may rise in the wells of such owner and into his pipes, no one of the owners of such lands has the right, without the consent of all the other owners, to induce an unnatural flow into or through his own wells, or to do any act with reference to the common reservoir, and the body of gas therein, injurious to, or calculated to destroy, it. In the case of lakes or flowing streams, it cannot be said that any particular part or quantity or proportion of the water in them belongs to any particular land or riparian owner; each having an equal right to take what reasonable quantity he will for his own use. But the limitation is upon the manner of taking. So, in the case of natural gas, the manner of taking must be reasonable, and not injurious to or destructive of the common source from which the gas is drawn. . . . [O]ne common owner of the gas in the common reservoir cannot divest all the others of their rights without wrongdoing. . . . [T]he common owners of the gas in the common reservoir, separately or together, have the right to enjoin any and all acts of another owner which will materially injure, or which will involve the destruction of, the property in the common fund, or supply of gas. . . . There is something in the nature of unity in their possession of the gas in the reservoir. . . . The facts stated in the complaint constitute a cause of action⁷⁹

The Indiana Supreme Court's recognition of a cause of action for unreasonable exploitation was grounded in its observation that the surface owners have a "unity in their possession of the gas in the reservoir" because of the migratory nature of subsurface natural gas.⁸⁰ Because the cause of action focused on the "manner of taking," it addressed activities that were not hidden (and that did not, for that reason, escape judicial scrutiny), and a court could assess the reasonableness of their impact on the shared resource.⁸¹

In *Forbell v. City of New York*, New York City had installed a water pumping plant that it knew would drain a significant amount of water from under areas outside the city.⁸² The New York Court of Appeals held this unreasonable exploitation of the subsurface water actionable:

79. *Id.* at 915–17.

80. *Id.* at 917. The court cites Blackstone for the "unity of possession" proposition. *Id.* (citing 2 WILLIAM BLACKSTONE, COMMENTARIES *182).

81. *Id.* at 915.

82. *Forbell v. City of New York*, 58 N.E. 644, 645 (N.Y. 1900).

In the cases in which the lawfulness of interference with percolating waters has been upheld, either the reasonableness of the acts resulting in the interference, or the unreasonableness of imposing an unnecessary restriction upon the owner's dominion of his own land, has been recognized. In the absence of contract or enactment, whatever it is reasonable for the owner to do with his subsurface water, regard being had to the definite rights of others, he may do. He may make the most of it that he reasonably can. It is not unreasonable, so far as it is now apparent to us, that he should dig wells and take therefrom all the water that he needs in order to the fullest enjoyment and usefulness of his land as land, either for purposes of pleasure, abode, productiveness of soil, trade, manufacture, or for whatever else the land as land may serve. He may consume it, but must not discharge it to the injury of others. But to fit it up with wells and pumps of such pervasive and potential reach that from their base the defendant can tap the water stored in the plaintiff's land, and in all the region thereabout, and lead it to his own land, and by merchandising it prevent its return, is, however reasonable it may appear to the defendant and its customers, unreasonable as to the plaintiff and the others whose lands are thus clandestinely sapped, and their value impaired.⁸³

The New York Court of Appeals extended the holding in *Forbell* to a factually similar case in which the purpose of the pumping was to withdraw and market natural gas with the ancillary effect of also withdrawing and wasting unreasonably large quantities of water.⁸⁴

While the common law cause of action for unreasonable exploitation of subsurface water is widely accepted, a pair of decisions from Pennsylvania and one from Ohio obscure the existence of the cause of action for unreasonable exploitation of oil and gas.⁸⁵ In *Kelly*

83. *Id.* at 645–46.

84. *Hathorn v. Natural Carbonic Gas Co.*, 87 N.E. 504, 507–08 (N.Y. 1909) (holding use of “pumps and other apparatus for the purpose of accelerating and increasing the flow of subterranean percolating waters and gas through deep wells” may constitute “unreasonable and improper conduct” for which plaintiff has “sufficient cause for appeal to, and relief by, a court of equity”).

85. *Kelly v. Ohio Oil Co.* 49 N.E. 399 (Ohio 1897); *Jones v. Forest Oil Co.*, 47 Pitt. L.J. 58 (Pa. Com. Pl. 1899) (holding use of a gas pump which diminished the production of adjoining landowners unless those landowners also employed a gas pump not actionable), *aff'd per curiam* 44 A. 1074 (Pa. 1900); *Barnard v. Monongahela Natural Gas Co.*, 216 Pa. 362 (Pa. Com. Pl. 1906) (holding location of wells near the property line not actionable), *aff'd per curiam* 65 A. 801 (Pa. 1907); see 1 SUMMERS OIL AND GAS § 3:2 (3d ed. 2012) (“The Pennsylvania court in *Jones*[, 47 Pitt. L.J. 58,] refused to enjoin the defendant from operating a pump which was drawing oil from the plaintiff's land. Likewise the Pennsylvania court in *Barnard*[, 216 Pa. 362], and the Ohio court in

v. Ohio, decided in 1897, the Ohio Supreme Court explicitly rejected causes of action for unreasonable exploitation of oil:

To drill an oil well near the line of one's land cannot interfere with the legal rights of the owner of the adjoining lands, so long as all operations are confined to the lands upon which the well is drilled. Whatever gets into the well belongs to the owner of the well, no matter where it came from. In such cases the well and its contents belong to the owner or lessee of the land, and no one can tell to a certainty from whence the oil, gas, or water which enters the well came, and no legal right as to the same can be established or enforced by an adjoining landowner. The right to drill and produce oil on one's own land is absolute, and cannot be supervised or controlled by a court or an adjoining landowner. . . . [I]t is intolerable that the owner of real property, before making improvements on his own lands, should be compelled to submit to what his neighbor or a court of equity might regard as a reasonable use of his property.⁸⁶

This was consistent with the Ohio Supreme Court's unequivocal statement in a water case, *Frazier v. Brown*, in 1861 that "there are no correlative rights existing between the proprietors of adjoining lands."⁸⁷ But the court overruled *Frazier* "and all its progeny" in *Cline v. American Aggregates Corp.* after nearly a century.⁸⁸ Accordingly, *Kelly v. Ohio Oil Co.* may no longer be good law in Ohio as it is among the progeny of *Frazier*'s rejection of "correlative rights existing between the proprietors of adjoining lands."⁸⁹

Kelley[, 49 N.E. 399], refused to enjoin the operation of oil wells near boundary lines, although the complainants contended that oil was being taken from their lands." (footnotes omitted)).

86. *Kelly*, 49 N.E. at 401.

87. *Frazier v. Brown*, 12 Ohio St. 294, 308 (1861) (quoting *Chatfield v. Wilson*, 28 Vt. 49 (1855)), *overruled by Cline v. Am. Aggregates Corp.*, 15 Ohio St. 3d 384, 387 (1984). The *Frazier* court suggested the only possible causes of action Ohio might recognize would be for interference with subsurface water motivated by "unmixed malice" and for interference with underground streams in well-defined channels. *Id.* at 304. The Ohio Supreme Court adopted a cause of action for interference with underground streams in well-defined channels in 1930. *Logan Gas Co. v. Glasgo*, 170 N.E. 874 (Ohio 1930).

88. *Cline*, 474 N.E.2d at 327 ("Finding th[e] reasonable use doctrine to be much more equitable in the resolution of ground water conflicts, this court overrules *Frazier v. Brown* . . . and all its progeny and adopts Section 858 of the Restatement of the Law 2d, Torts, as the common law of Ohio.").

89. *Frazier*, 12 Ohio St. at 308 (quoting *Chatfield v. Wilson*, 28 Vt. 49 (1855)).

In *Jones v. Forest Oil Co.* and *Barnard v. Monongahela Natural Gas Co.* the Pennsylvania Supreme Court issued per curiam affirmances of court of common pleas decisions rejecting challenges to unreasonable exploitation of oil and gas.⁹⁰

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90. *Jones v. Forest Oil Co.*, 44 A. 1074 (Pa. 1900) (affirming *Jones v. Forest Oil Co.*, 47 Pitt. L.J. 58 (Pa. Com. Pl. 1899)); *Barnard v. Monongahela Natural Gas Co.*, 65 A. 801 (Pa. 1907) (affirming *Barnard v. Monongahela Natural Gas Co.*, 216 Pa. 362 (Pa. Com. Pl. 1906)). These were cases in equity so the appeals at the time were exclusively in the jurisdiction of the Pennsylvania Supreme Court. It is important to clear up their procedural nature, which has been greatly misstated. In both cases the text of the affirmed lower court decisions were set out in the reporter before the court's opinion. The opinions themselves are short affirmances. In *Jones*: "Though this particular question is somewhat of a novelty, the principles which control it are very familiar, and perfectly well settled. They are well expressed in the opinion of the learned court below, and, on the findings of fact and conclusions of law there contained, we affirm the decree." *Jones v. Forest Oil Co.*, 44 A. 1074, 1076 (Pa. 1900). In *Barnard*: "Decree affirmed on the opinion of the court below." *Barnard v. Monongahela Natural Gas Co.*, 65 A. 801, 803 (Pa. 1907). Yet commentators and courts have for some reason treated the lower court opinions as if they were issued by the Pennsylvania Supreme Court, even going so far as to quote extensively from the excerpts of the lower court decision while citing to the Supreme Court's per curiam affirmance. See, e.g., W.L. Summers, *Property in Oil and Gas*. 29 YALE L.J. 174, 177 (1919) ("In another case where the question was of the right of the owner of an oil well to pump oil from his well regardless of injury to his neighbor, the Supreme Court of Pennsylvania apparently realized that the absolute ownership doctrine in the sense of giving an absolute right to take could not be applied so they reverted to the theory that 'possession of the land is not necessarily possession of the oil and gas,' and concluded 'that the property of the owner of the lands in oil and gas is not absolute until it is actually within his grasp and brought to the surface.'" (erroneously quoting *Jones*, 44 A. 1074)); Bruce M. Kramer & Owen L. Anderson, *The Rule of Capture—An Oil and Gas Perspective*, 35 ENVTL. L. 899, 911 (2005) ("In *Jones v. Forest Oil Co.*, the Pennsylvania Supreme Court had to determine whether the rule of capture gave the owner the power to use a 'gas pump' to artificially increase production and cause oil to drain from underneath the adjacent owner's land. . . . The court used a percolating water case to support the proposition that a person may capture water, and by analogy gas, by the 'exercise of all the skill and invention of which man is capable.' . . . The court used an analogy to the offset drilling rule by concluding that, since all oil operators can afford gas pump technology, the remedy does not lie in the courts but in the self-help of getting one's own gas pump to counter the alleged drainage." (footnote omitted) (erroneously quoting *Jones*, 44 A. 1074)). In Pennsylvania, per curiam orders have no precedential effect. Further, when other courts and commentators treat these decisions as issuing directly from a state supreme court, and not just any supreme court, but the supreme court of the state in which Drake made his famous discovery, they are afforded far more persuasive authority than they deserve.

In *Jones v. Forest Oil Co.*, a landowner operating six oil wells sought and initially obtained an injunction against the use of a gas pump by Forest Oil at a well on the adjoining tract.⁹¹ When Forest Oil began using the gas pump, production from three of the landowner's wells was reduced.⁹² After the issuance of the initial injunction against the use of the gas pump, the production in the three wells increased to its former levels.⁹³ At the conclusion of a trial, the court of common pleas found that gas pumps are typically employed in "failing and almost exhausted territory," that "its use by one operator necessitates its use by others in the immediate neighborhood if they desire to prevent the daily production of their wells from being decreased," and that "if pumps are placed on all wells the production of the wells is neither increased nor diminished."⁹⁴ As to the circumstances of the field at issue in the case, the court of common pleas found that "gas pumps were in use" in the field by others for more than one year before the Forest Oil installed its gas pump and "that the production of the wells" in the field had "largely decreased" and was at the time "almost exhausted."⁹⁵

In determining whether to issue a permanent injunction, the court of common pleas questioned "to what extent an owner of oil wells may use mechanical devices for bringing oil to the surface. In operating his own wells may he use appliances which diminish the production of his neighbor's wells?"⁹⁶ The court of common pleas concluded that "the use of a gas pump by [Forest Oil] under the circumstances of th[e] case [was] not an unlawful act that should be restrained by injunction" and accordingly dismissed the bill and dissolved the initially issued injunction.⁹⁷ The Pennsylvania Supreme Court affirmed *per curiam*.⁹⁸

Despite the ultimate outcome, the decision of the court of common pleas suggests recognition of a cause of action for unreasonable exploitation. Not only did the case go to trial, the court issued a preliminary injunction against the use of the gas pump. The circumstances of the case referred to by the court are evidently the fact that the field depleted to a point such that it was reasonable for all owners to employ a gas pump. The case does not hold that using a

91. *Jones v. Forest Oil Co.*, 47 Pitt. L.J. 58 (Pa. Com. Pl. 1899).

92. *Id.* at 59.

93. *Id.*

94. *Id.*

95. *Id.*

96. *Id.*

97. *Id.* at 60.

98. *Jones v. Forest Oil Co.*, 44 A. 1074 (Pa. 1900).

gas pump or other methods of increasing the flow of gas in wells is always privileged and not subject to a requirement of reasonableness. Even if it did, as some suggest or imply,⁹⁹ its precedential and persuasive value for such a proposition is limited.

In *Barnard v. Monongahela Natural Gas Co.*, Daniel and Elizabeth Barnard leased sixty-six acres to Monongahela Natural Gas for oil and gas production.¹⁰⁰ James Barnard leased an adjoining 156-acre parcel to Monongahela for the same purpose. Under the terms of the leases, each lessor would be paid royalties on gas and oil produced only from wells on the lessor's land. Daniel and Elizabeth Barnard protested as Monongahela Natural Gas first drilled a paying well on James Barnard's land only fifty-five feet from a right angle boundary between the parcels. In this location, the well would draw approximately three-fourths of the gas it produced from beneath Daniel and Elizabeth Barnard's land while James would receive one hundred percent of the royalties. The company next drilled a well 1,350 feet away from the first well on Daniel and Elizabeth Barnard's parcel that failed to produce gas. Daniel and Elizabeth Barnard sued Monongahela Natural Gas for the unreasonable location of the first well. After fact finding, the court of common pleas purported only "to follow the lead of the decisions, not to qualify, explain, modify, overrule or reverse them," but it issued a sweeping decision:

If . . . the landowner drills on his own land at such a spot as best subserves his purposes what is the standing of the adjoining landowner whose oil or gas may be drained by this well? He certainly ought not to be allowed to stop his neighbor from developing his own farm. There is no certain way of ascertaining how much of the oil and gas that comes out of the well was

99. 1 W. W. THORNTON, *THE LAW RELATING TO OIL AND GAS* (3d ed. 1918) § 32 (citing *Jones* for the proposition that the "the right to pump [oil wells] clearly exists"); WALTER L. SUMMERS, *A TREATISE ON THE LAW OF OIL AND GAS* § 24, at 74 (1927) ("[A]ttempts have been made to stop operations on adjoining lands, on the theory that the pumping of oil wells, thereby producing an unnatural flow of the oil, was violative of complainant's rights; but in no case has a restraint been placed upon the pumping of oil." (citing *Jones* and *Higgins Oil & Fuel*)); 1 SUMMERS *OIL AND GAS* § 3:2 (3d ed. 2012) (citing *Jones* as an example of an early case that "declared that the landowner was legally privileged to take oil and gas even though he drained oil and gas from the lands of his neighbor"); Kramer & Anderson, *supra* note 93, at 911 ("The use of artificial means to increase production, and thereby increase drainage from across property lines, was held to be a lawful act under the rule of capture."); *id.* at 919 n.116 (characterizing *Jones* as "holding that an oil and gas operator may use any appliances known to the trade to make well production as large as possible").

100. *Barnard v. Monongahela Natural Gas Co.*, 216 Pa. 362 (Pa. Com. Pl. 1906).

when in situ under this farm and how much under that. What then has been held to be the law?—it is this, as we understand it, every landowner or his lessee may locate his wells wherever he pleases regardless of the interests of others. He may distribute them over the whole farm or locate them only on one part of it. He may crowd the adjoining farms so as to enable him to draw the oil and gas from them. What then can the neighbor do? Nothing, only go and do likewise. He must protect his own oil and gas. He knows it is wild and will run away if it finds an opening and it is his business to keep it at home. This may not be the best rule, but neither the legislature nor our highest court has given us any better. No doubt many thousands of dollars have been expended “in protecting lines” in oil and gas territory that would not have been expended if some rule had existed by which it could have been avoided. Injunction certainly is not the remedy. If so, just how far must the landowner be from the line of his neighbor to avoid the blow of “this strong arm of the law”?¹⁰¹

The Pennsylvania Supreme Court affirmed per curiam.¹⁰²

The *Barnard v. Monongahela Natural Gas Co.* decision by the court of common pleas is arguably without foundation. First, the court did not believe courts are incapable of judicial resolution of the dispute, indeed the court seemed to plead with the Pennsylvania Supreme Court to reverse.¹⁰³ The court noted its incapacity to “ascertain[] how much of the oil and gas that comes out of the well was when in situ under this farm and how much under that,” but this was unnecessary to the injunctive remedy sought in the case.¹⁰⁴ And the reasonableness of the location does not depend on the actual proportions of drained oil and gas that enter the well, but rather it is a matter of whether the location itself has been unreasonably chosen under the circumstances of each case. In the case before the court, the location was not merely close to a boundary line, it was tucked into a corner of a parcel such that three fourths of the oil entering the well would

101. *Id.* at 364–65. To its credit, the common pleas court was displeased with the law it announced, as revealed by the discussion of the court’s role as a lower court unable to declare “what ought to be the law,” the mention of wasted line-protecting expenditures, and the thinly veiled plea to the legislature and the Pennsylvania Supreme Court to craft a better rule. *Id.*

102. *Barnard v. Monongahela Natural Gas Co.*, 65 A. 801, 803 (Pa. 1907).

103. *Barnard v. Monongahela Natural Gas Co.*, 216 Pa. 362, 364 (Pa. Com. Pl. 1906) (“The Supreme Court . . . may declare ‘what ought to be the law’ to be henceforth ‘the law,’ but the lower courts have no such authority.”); *id.* at 365 (“This may not be the best rule; but neither the legislature nor our highest court has given us any better.”).

104. *Id.* at 365.

presumably draw from outside the property boundary.¹⁰⁵ The unreasonableness was further compounded by the fact that the lessee held oil and gas rights to both of the parcels and therefore had no incentive to locate an offset well immediately on the other side of the boundary. Thus Daniel and Elizabeth Barnard could not “protect [their] own oil and gas” by “go[ing] and do[ing] likewise” as the court admonished them to.¹⁰⁶ The court’s concluding rhetorical question, “just how far must the landowner be from the line of his neighbor,” is easily answered.¹⁰⁷ The landowner must first attempt to enter into an agreement with the neighbor as to the location of the well. If the neighbor refuses to agree, the landowner must choose a reasonable location under the circumstances with the knowledge that an unreasonable location is actionable. This is hardly an unfortunate position for the landowner. If it were, the law of nuisance is always a hardship on those who must each and every day ask themselves just how little nuisance they may cause neighbors “to avoid the blow of ‘this strong arm of the law.’”¹⁰⁸

There is no cause of action for unreasonable exploitation of subsurface water in Texas, but there may be a cause of action for unreasonable exploitation of oil and gas. The Texas Supreme Court explicitly rejected the cause of action for unreasonable exploitation of water in *Sipriano v. Great Spring Waters of America Inc.* in 1999.¹⁰⁹ As for oil and gas, the Texas Supreme Court stated in dicta in a 1935 case that

[t]he common law recognizes no well spacing regulations. At common law the landowner can drill an unlimited number of wells for oil and gas upon his land. . . . The adjoining landowner cannot complain if wells are drilled near his boundary line. Under this rule the only way the landowner can protect himself is to drill offset wells.¹¹⁰

But there are no cases fitting this description in Texas, and it is undermined by language in *Elliff v. Texon Drilling Co.* in 1948.¹¹¹ More

105. If it were simply close to a line and not in a corner, it could be expected to draw no more than half the oil from beyond the boundary.

106. *Id.* This suggests the lessee in such a circumstance should have an obligation to drill an offset well, but the common pleas court separately held it did not. *Id.*

107. *Id.*

108. *Id.*

109. *Sipriano v. Great Spring Waters of Am., Inc.*, 1 S.W.3d 75 (Tex. 1999).

110. *Brown v. Humble Oil & Ref. Co.*, 83 S.W.2d 935, 940 (Tex. 1935).

111. *Elliff v. Texon Drilling Co.*, 210 S.W.2d 558, 562 (Tex. 1948) (holding “there is no liability for *reasonable and legitimate* drainage from the common pool” (emphasis added)).

recently, the court rejected a cause of action for the unreasonable use of horizontal slickwater fracturing in *Coastal Oil & Gas v. Garza Energy Trust*. The court did not explicitly examine the reasonableness of the use of horizontal slickwater fracturing, but it emphasized “hydraulic fracturing is not optional; it is essential to the recovery of oil and gas in many areas, including the Vicksburg T formation in this case.”¹¹² The necessity of the use of the method of exploitation is irrelevant if there is no requirement of reasonable exploitation.

The status of unreasonable exploitation is also unclear under the civil law system of Louisiana. The Supreme Court of Louisiana has affirmed the right to use a pump, but in doing so observed, “All the operators in the oil field in question, including defendant, are using pumps; what good ground, then, could [one] have for denying [a neighbor] the right to do that same thing?”¹¹³ Perhaps the result would be different under the facts pled in *Jones v. Forest Oil Co.* The necessity of pumping in the particular field may be central to the case, as the court curiously stated at the outset that even though the complaint “does not allege that the underlying oil cannot be brought to the surface otherwise than by pumping,” this fact “is impliedly contained in the allegation which is made that every operator in that oil field is using a pump.”¹¹⁴ There would be no need for drawing this implication if it were not relevant.

In our judgment, the door remains open for unreasonable exploitation of oil and gas suits in Ohio, Texas, and Louisiana. The potential for such an action in Pennsylvania is limited by *Jones v. Forest Oil Co.* and *Barnard v. Monongahela Natural Gas Co.*, but as these are per curiam affirmances with little precedential effect, the question of the whether one surface owner can sue another surface owner for unreasonable exploitation of oil and gas is still open.¹¹⁵

112. *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1, 16 (Tex. 2008).

113. *Higgins Oil & Fuel Co. v. Guaranty Oil Co.*, 82 So. 206, 211 (La. 1919).

114. *Id.* at 207.

115. Like Ohio, Pennsylvania recognized the unreasonable exploitation of subsurface water action subsequent to its decision limiting actions for unreasonable exploitation of oil and gas. *Rothrauff v. Sinking Spring Water Co.*, 14 A.2d 87, 90 (Pa. 1940) (holding that the “diversion or sale to others away from the land” of subsurface water that “impairs the supply of a spring or well on the property of another . . . is not for a ‘lawful purpose’ within the general rule concerning percolating waters, but constitutes an actionable wrong for which damages are recoverable”). But unlike Ohio, there was no prior precedent that rejected an action of unreasonable exploitation of subsurface water, thus the later decision cannot be said to undermine the earlier per curiam affirmances. The affirmances leave some inconsistency between the treatments of different subsurface fluids in the state, but *Rothrauff* involved conduct that has only ever been found unreasonable in water

II. UNDERSTANDING THE LAW OF SUBSURFACE RESOURCE POOLS THROUGH THE SHARED PROPERTY PARADIGM

As we saw in Part I, because of the migratory character of subsurface resources, the common law recognized actions for malicious interference, waste, and unreasonable exploitation. In this Part, we argue that these actions embody the shared property paradigm. We have also seen that common law courts, by invoking the doctrine of *damnum absque injuria*, limited the right of one surface owner to recover from another surface owner for underground, and therefore unseen, interferences with the resource pools underneath their property. Although this limited the right of each surface owner to an accounting from other surface owners, and thus differs from the shared property paradigm applicable to surface owners—such as timber owned by tenants in common—we argue that this deviation from the shared property paradigm was attributed solely to the uncertainty created by the hidden nature of the subsurface resource pools.

Accordingly, we argue that the common law's framework for addressing problems caused by subsurface resource pools is a coherent application of the shared property paradigm, taking into account the hidden nature of the resource. In other words, we argue that common law judges based subsurface resource pool decisions on a theory of shared property. But most scholarly discussions of these cases have failed to grasp this. As such, the conventional views of the common law of subsurface property rights are deficient because they focus on either individual or common ownership features of subsurface resource pools and fail to appreciate the actual theory that common law courts followed—the shared property paradigm.

Our analysis rests on a theory that property is a social institution in which ownership and use rights take various forms for different resources. Property law addresses a basic and unavoidable social issue: Who ought to make decisions about resources and how ought those decisions be made? In an important sense, all resources are shared because they are the common inheritance of humankind. But society has found it convenient to break resources into various packages and to assign decision-making responsibility over those packages to different individuals. Sometimes the packages are assigned to individuals as private property, sometimes to the public as commons property, and sometimes to a group of individuals, as in the case of underground oil, gas, and water, as shared property. Each of these forms of property reflects a different paradigm about who makes

cases. Thus, it may be that in Pennsylvania there is no cause of action for unreasonable well location or unreasonable method of extraction even for water.

decisions about resources and how they are made. The paradigms are not unrelated—the commons property paradigm, the private property paradigm, and the shared ownership paradigm are applications of a single and unified theory of property law.¹¹⁶ It is a functional theory because it posits that the function of law is to coordinate between the interests of free and equal people in order to address conflicts between them. Under this view, law should not be understood by the principles or rules or concepts that we normally think of as law but by the methods of analysis the law uses to address social problems.

Under the commons property paradigm, we assign dominion over a resource to the public, allowing members of the public to make individual decisions about how the resource is to be used, but disallowing any exclusive dominion over the commons itself. Under this paradigm, exclusion from the commons is not allowed, while consumption or appropriation of the fruits of the commons is allowed. The commons is not “owned” by individuals in the traditional sense, and individuals have no right to exclude others, but the fruits of the commons may be appropriated, and thereafter owned by, individuals. An ocean is a commons; the fish in the ocean are commons property until captured. A meadow can be commons property, freely available to all until the grass in the meadow is consumed. A highway is commons property, free to be used by all, where consumption is determined by the rules of the road, and particularly by the obligation to be reasonable. Assigning property to the commons works only if society has some mechanism to insure that individual consumption and appropriation decisions do not decrease the long-term value of the resource. Without a mechanism for coordinating the use of the commons, individual decisions will result in overuse and eventual depletion of the commons—the familiar “tragedy of the commons.” In the United States, the coordinating mechanism is sovereign authority over commons resources. Thus, commons resources are subject to the absolute control of state governments, and this sovereign authority over the commons is not limited by the Due Process Clause of the Fourteenth Amendment.¹¹⁷

Under the private property paradigm, we assign dominion over parts of the earth’s resources to private individuals, allow each individual to be the decision maker, and then coordinate the individual decisions in several ways: private agreement, private law, public regulation, eminent domain, and, most importantly, through the market. In this paradigm the right to exclude is crucial—as

116. That theory is elaborated in greater detail in PETER M. GERHART, *PROPERTY LAW AND SOCIAL COHESION* (Cambridge Univ. Press forthcoming 2013).

117. This is especially important in the law of subsurface resource pools, as noted below. *See infra* Part II.B.4.

Professor Merrill often reminds us because the right to exclude is what makes private arrangements and the market work.¹¹⁸ Assigning dominion to private owners works only if society has available strong mechanisms of coordination. Without those coordinating mechanisms we run into the tragedy of the anticommons: separate and uncoordinated decisions resulting in underutilization and waste. Accordingly, when we allow private owners to make decisions, we subject them to the coordinating mechanisms of, for example, nuisance law and eminent domain. One owner's use decisions must, under nuisance law, reasonably account for the use decisions of her neighbors. If society wants to build a railroad, private decisions will not get the job done, so we give the government the power of eminent domain in order to coordinate decisions across individual owners.¹¹⁹ Private decision making subject to social coordination emphasizes that in some larger sense all resources are shared.

Under the shared property paradigm, we assign dominion over parts of the earth's resources to more than one owner but require the several owners to coordinate fairly their use of the resource as a condition of its exploitation. In the case of subsurface resource pools, dominion over the resource is assigned in proportion to the resource underlying the surface boundaries (thus recognizing the *ad coelom* aspect of surface ownership). But exploitation of each portion of the

118. Alienability is as important as the right to exclude for markets to exist, but it is often assumed in discussions of property. This is an ahistorical view, as the recognition of private property preceded the recognition of the right to alienate. Even today for some property, such as the human body, the law recognizes a right to exclude but not a right to alienate. This alienability question is at the heart of scores of early oil and gas cases and the inability to distinguish the judicial treatment of the alienability of oil and gas exploitation rights from the nature of the rights themselves. The alienability cases are collected in Part III, but as the questions they address are distinct, they are not used to analyze the nature of property paradigm that common law courts recognized in subsurface resource pools.

119. The power of eminent domain recognizes that some public goods may be under produced without government action. Eminent domain is but one exercise of government power to increase production of public goods. Government may also delegate the power to tax those who benefit from the production of the public good. See R.H. Coase, *The Lighthouse in Economics*, 17 J.L. & ECON. 357, 367-72 (1974) (discussing such a plan while arguably failing to recognize the significance of the taxation delegation). Under another approach that was once far more frequently utilized, government can recognize in private individuals prescriptive rights to capture the public goods they generate. Thus, an individual who first invests in a ferry to an undeveloped island could be permitted to sue those who might attempt to compete with the original ferry owner once the island is developed. See Cheren, *supra* note 13, at 574 n.74 (recounting an old English common law nuisance action filed by the owner of an established ferry against an upstart).

resource requires that the rights of each surface owner be treated equally, given each owner's percentage interest in the pool, and this requires that decisions about exploiting the resource must take into account the proportionate interests of each of the owners. In effect, this means that sharing owners must act as single unit with respect to the exploitation of the pool while their benefits from that exploitation are divided into their proportionate shares.

Underground resource pools fit the paradigm of shared property—not a paradigm of commons property or private property. Given the highly interdependent nature of the decisions of surface owners, each has the right to exploit the resource pool, subject to the proportional and equal right of other surface owners to do the same. Equal rights to exploitation mean that the rights are shared, much like tenants in common. But unlike tenants in common, each owner does not have an equal right to the whole of the pool but an equal right to the owner's proportional share in the value of the whole pool—the share lying below the owner's land. Not only is this shared property paradigm the appropriate paradigm for addressing common pool resources, it is the paradigm that, by and large, common law courts intuitively followed, even though theorists, having only the private and commons property paradigms to guide them, mischaracterized what courts were doing.

A. *Conventional Views Apply Private and Commons Paradigms*

The commons property and private property paradigms do not accurately address the social problems raised by underground resource pools, nor is either consistent with how common law courts actually addressed problems caused by subsurface resource pools. Yet those paradigms inform the different conventional views of the common law of subsurface resource pools. The *ferae naturae* view suggests that subsurface pooled resources are commons property, while the *ad coelum* view treats subsurface pooled resources as private property. The analytical limits of the commons and private property paradigms are not without consequence. The few courts that strictly follow either of these paradigms have reached highly problematic results.

1. The *Ferae Naturae* View and Commons Property

The conventional *ferae naturae* view of the common law of subsurface resource pools is that the resources are commons property. Proponents of this view claim as a historical matter that courts established the rule of capture for subsurface resource pools because the migratory character of the resource made them analogous to wild animals.¹²⁰ But as Part I.B demonstrates, this is historically inaccurate

120. DUKEMINIER ET AL., *supra* note 2, at 53 (suggesting that, like wild animals, groundwater, oil, and gas are “owned in common”); *id.* at 36 (“[B]ecause ownership of wild animals had long been settled in terms of

because the nonliability for drainage is grounded in the hidden character of subsurface resource pools, not on its migratory character. In this Section, we carry our analysis further by demonstrating that the ownership of subsurface resource pools is not “determined in the same manner” as wild animals at all because subsurface resource pools are not commons property.¹²¹

Subsurface resource pools are not commons property because the right to exploit the pool is available only to the surface owners rather than any member of the public. The court in *Manufacturers’ Gas & Oil Co. v. Indiana Natural Gas & Oil Co.* explains:

Natural gas, being confined within limited territorial areas, and being accessible only by means of wells or openings upon the lands underneath which it exists, is not the subject of public rights in the same sense or to the same extent as animals *ferae naturae* and the like are said to be. Without the consent of the owner of the land, the public cannot appropriate it, use it, or enjoy any benefit whatever from it. This power of the owner of the land to exclude the public from its use and enjoyment plainly distinguishes it from all other things with which it has been compared, in the use, enjoyment, and control of which the public has the right to participate, and tends to impress upon it, even when in the ground in its natural state (at least, in a qualified degree), one of the characteristics or attributes of private property. In the case of animals *ferae naturae*, fish, and the like, this public interest is said to be represented by the sovereign or state. So, in the case of navigable rivers and public highways, the state, in behalf of the public, has the right to protect them from injury, misuse, or destruction.¹²²

If subsurface resource pools were commons property until captured and any member of the public could tap the pools, this would create a potential for a tragedy of the commons, and accordingly it would be necessary for the state to exert sovereign authority over subsurface resource pools. Fortunately, the Supreme Court recognized early on that subsurface resource pools are not commons property for constitutional purposes.¹²³

The implicit nationalization of oil and gas reserves is not the only erroneous analytical consequence that comes from applying the commons property paradigm to subsurface resource pools. Following

the rule of capture, the courts reasoned that ownership of oil and gas should be determined in the same manner.”).

121. *Id.* at 36.

122. *Mfrs.’ Gas & Oil Co. v. Ind. Natural Gas & Oil Co.*, 57 N.E. 912, 915 (Ind. 1900).

123. *See infra* Part II.B.4.

the conventional *ferae naturae* view of commons property leads to the erroneous and now overruled result in *Hammonds v. Central Kentucky Natural Gas Co.*, which held that reinjected oil and gas returns were commons property.¹²⁴

2. The *Ad Coelum* View and Private Property

As counterpoint to the *ferae naturae* and commons property view of subsurface resource pools, the conventional *ad coelum* view suggests that the resources are private property. Proponents of this view believe, as a historical matter, that courts were suggesting that because subsurface resource pools are “the absolute property of the owner of the freehold,” a land owner “is free to withdraw” the resources “at will” and “do with” them as the landowner “pleases regardless of the effect upon his neighbors.”¹²⁵ Such a view is historically inaccurate on two counts. First, as we demonstrated in Part I.B, the common law never privileged exploitation of subsurface resource pools, contrary to a central tenant of *ad coelum* theory. Second, as we demonstrated in Part I.C, even though injuries to subsurface resource pools were generally considered to be *damnum absque injuria*, courts recognized actions for malicious interference, waste, and unreasonable exploitation. In fact, courts did not hold that subsurface resource pools were individually and distinctly owned by surface owners.

If subsurface resource pools are the individuated private property of the surface owners, as the *ad coelum* view suggests, then it must be conceded that each individual surface owner loses ownership of water, oil, and gas once it migrates across the property line. Otherwise, if title were retained, one landowner could sue another for conversion of private property by causing drainage of subsurface resources. But even if one owner loses title once resources cross the boundary, courts have not held that one neighbor is immune from a suit for nuisance for causing a diminishment of the value of the landowner’s freehold. The Oklahoma Supreme Court explains:

124. *Hammonds v. Cent. Ky. Natural Gas Co.*, 75 S.W.2d 204, 206 (Ky. 1934) (“[I]f in fact the gas turned loose in the earth wandered into the plaintiff’s land, the defendant is not liable to her for the value of the use of her property, for the company ceased to be the exclusive owner of the whole of the gas—it again became mineral *ferae naturae*.”), *overruled by* *Tex. Am. Energy Corp. v. Citizens Fid. Bank & Trust Co.*, 736 S.W.2d 25 (Ky. 1987); *see also* *DUKEMINIER ET AL.*, *supra* note 2, at 37 (criticizing the result in *Hammonds*).

125. *RESTATEMENT (SECOND) OF TORTS*, ch. 41, topic 4, intro. note, at 256 (1977); *see also* *DUKEMINIER ET AL.*, *supra* note 2, at 36–37 (noting that reinjection of underground resources “does not ordinarily give rise to liability for the use and occupation of parts of a reservoir underlying the land of neighbors”).

[If] the landowner “owns” that elusive and unstable substance, percolating water, beneath his land, it must likewise be true that the adjacent landowner is given the same with respect to that which underlies his land. If one owner invades the natural movement, placement, and percolation of such water by creating artificial suction with powerful motor driven pumps, it is not long until he is taking that water which was but a moment before “owned” by his neighboring landowner. We do not say that this is forbidden, so long as the taking is reasonable; but we do say that it exposes the futility of attempting to justify the complete exhaustion of a common supply of water on the ground that the landowner who has taken it all “owned” that part thereof underlying his land when the operations commenced. His neighbor likewise had an ownership.¹²⁶

Recognition of the surface owner’s absolute dominion over the subsurface resource pool beneath the freehold does not resolve the question of whether the surface owner has actionably exercised that dominion. Absolute ownership of private property has always been limited by the obligation of *sic utero ut alienum laedas*. The *ad coelum* view of subsurface resource pools as individuated private property requires not only recognition of a theory of title-loss but also a theory of nuisance immunity as well. The private property paradigm justifies neither modification, and it is therefore not the paradigm that the common law applied to subsurface resource pools.

A prime example of mistaken doctrine that can be attributed to the application of the private property paradigm of the *ad coelum* view is that some states have wrongfully denied a cause of action when one neighbor extracts subsurface water that threatens subsidence of neighboring land. In *Finley v. Teeter Stone, Inc.*, the Maryland Supreme Court held that the extraction of subsurface water that threatens to cause subsidence of neighboring land is not actionable,¹²⁷ a position then adopted by the Restatement and several other cases.¹²⁸

126. *Canada v. City of Shawnee*, 64 P.2d 694, 699 (Okla. 1936).

127. *Finley v. Teeter Stone, Inc.*, 248 A.2d 106, 116–17 (Md. 1968).

128. RESTATEMENT (SECOND) OF TORTS § 818 (1939) (“To the extent that a person is not liable for withdrawing subterranean waters from the land of another, he is not liable for a subsidence of the other’s land which is caused by the withdrawal.”); *see, e.g.*, *N.Y. Cont’l Jewell Filtration Co. v. Jones*, 37 App. D.C. 511, 512, 518 (1911) (reversing judgment for land subsidence and cracking of house’s foundation caused by the withdrawal of subsurface water in the course of constructing a tunnel); *Elster v. City of Springfield*, 30 N.E. 274, 278–79 (Ohio 1892) (holding that landowner cannot be prevented from legitimate use of land even if the effect is to drain a reservoir used by an adjoining landowner); *Langbrook Props., Ltd. v. Surrey Cnty. Council*, [1969] 3 All E.R. 1424 (Ch.) 1424 (Eng.) (holding that plaintiffs did not have a claim against

This result is not dictated by *Acton* because *Acton* did not hold that a neighbor is privileged to pump subsurface water no matter what the injury to the neighbor; *Acton* dealt only with the diversion of water. A Texas Supreme Court justice, in a dissenting opinion, aptly noted the error:

The court has decided this cause upon the mistaken belief that the case is governed by the ownership of ground water. Plaintiffs assert no ownerships to the percolating waters pumped and extracted from the ground by defendants. They make no complaint that their own wells have been or will be pumped dry. They seek no damages for the defendants' sale of the water. Plaintiffs' action calls for no change in nor even a review of the English rule of "absolute ownership" of ground water, the American rule of "reasonable use" of ground water, nor the Texas rule of "nonwasteful" use of ground water. They claim no correlative rights in the water. The Texas law of percolating waters is not put in issue by this suit

Plaintiffs' complaint is that defendants are causing subsidence of their land. They assert an absolute right to keep the surface of their land at its natural horizon. The landowners' right to the subjacent support for their land is the only right in suit It is no more logical to say that this is a case concerning the right to ground water than it would be correct in a case in which an adjoining landowner removed lateral support by a caterpillar to say that the case would be governed by the law of caterpillars. In making this decision about one's right to subjacent support, I would use as analogies other kinds of cases concerning support, such as the right to lateral support.

A landowner's right to lateral support for his land is an absolute right. The instrument employed in causing land to slough off, cave in or wash away is not the real subject of inquiry. The inquiry is whether the adjoining owner actually causes the loss of support. Whether the support is destroyed by excavation, ditching, the flowing of water, the pumping of water, unnatural pressure, unnatural suction, or explosives, the right to support is the same, and it is an absolute right.¹²⁹

defendants for settlement damage caused by defendant removing water beneath plaintiff's land).

129. *Friendswood Dev. Co. v. Smith-Sw. Indus.*, 576 S.W.2d 21, 31 (Tex. 1978) (Pope, J., dissenting) (citations omitted). To be fair, Texas has at least employed several exceptions to the erroneous rule. *Id.* at 30 (majority opinion) (adopting rule going forward that "if the landowner's manner of withdrawing ground water from his land is negligent, willfully wasteful, or for the purpose of malicious injury, and such conduct is a

Courts in other states agree that subsidence injury is not *damnum absque injuria* when caused by the withdrawal of subsurface water.¹³⁰

3. Why the Old Shoes Do Not Fit

As we showed in Part I, the conventional views do not accurately describe the legal doctrine developed by judges in the common law of subsurface resources. We believe that these errors resulted from attempts to explain the legal relationship between surface owners according to familiar paradigms. Although we hesitate to point fingers more than we already have, and are conscious that many scholars simply repeated the conventional wisdom, the academic literature on the relevant legal relationships is replete with inappropriate generalizations about cases that dealt with narrow, specialized issues. Nonetheless, it is important to point out the cases that are inapplicable to the legal relationship of surface owners. Commentators have inappropriately relied upon cases resolving disputes between competing claims to development rights in the same parcel;¹³¹ cases determining

proximate cause of the subsidence of the land of others, he will be liable for the consequences of his conduct”).

130. The dissent in *Friendswood Development* notes that “[r]espectable American authority supports the rule that a landowner has the right to the support afforded by subterranean waters.” *Id.* at 32 (Pope, J., dissenting) (citing N.Y. Cent. R. Co. v. Marinucci Bros. & Co., 149 N.E.2d 680, 682 (Mass. 1958); *Gamer v. Town of Milton*, 195 N.E.2d 65, 67 (Mass. 1964); *Cabot v. Kingman*, 44 N.E. 344, 345 (Mass. 1896); *Bjorvatn v. Pac. Mech. Constr., Inc.*, 464 P.2d 432, 434–35 (Wash. 1970) (en banc); *Muskatell v. City of Seattle*, 116 P.2d 363, 371 (Wash. 1941); *Farnandis v. Great N. Ry. Co.*, 84 P. 18, 21–22 (Wash. 1906); 1 AM. JUR. 2D *Adjoining Landowners* § 80 (1962); 2 C.J.S. *Adjoining Landowners* § 38 (1972); Annotation, *Right of Property Owner to Repel or Remove Flood Water from Building*, 4 A.L.R. 1104 (1919)); see also *Drummond v. White Oak Fuel Co.*, 140 S.E. 57, 60–61 (W. Va. 1927) (holding that diversion of subsurface waters as a result of mining on adjacent land does not give rise to a claim if sufficient support leaves the surface undisturbed).
131. *Brown v. Spilman*, 155 U.S. 665, 673 (1895); *Osborn v. Ark. Territorial Oil & Gas Co.*, 146 S.W. 122, 125 (Ark. 1912); *Triger v. Carter Oil Co.*, 23 N.E.2d 55, 56 (Ill. 1939); *Watford Oil & Gas Co. v. Shipman*, 84 N.E. 53, 54 (Ill. 1908); *Union Gas & Oil Co. v. Fyffe*, 294 S.W. 176, 178 (Ky. 1927); *Frost-Johnson Lumber Co. v. Nabors Oil & Gas Co.*, 88 So. 723 (La. 1920); *De Moss v. Sample*, 78 So. 482, 482–83 (La. 1918); *Rives v. Gulf Ref. Co. of La.*, 62 So. 623, 624–25 (La. 1913); *Wagner v. Mallory*, 62 N.E. 584, 585 (N.Y. 1902)); *Rich v. Doneghey*, 177 P. 86, 89, 100 (Okla. 1918); *Hamilton v. Foster*, 116 A. 50, 52 (Pa. 1922); *Mandle v. Gharing*, 100 A. 535, 537 (Pa. 1917); *Kleppner v. Lemon*, 35 A. 109, 110 (Pa. 1896); *Blakley v. Marshall*, 34 A. 564, 565 (Pa. 1896); *Wettengel v. Gormley*, 28 A. 934, 935 (Pa. 1894); *Brown v. Vandergrift*, 80 Pa. 142, 142 (1875); *Funk v. Haldeman*, 53 Pa. 229, 249 (1866); *Kier v. Peterson*, 41 Pa. 357, 360–62 (1861)); *Murray v. Allard*, 43 S.W. 355, 355 (Tenn. 1897); *Bender v. Brooks*, 127 S.W. 168, 168 (Tex. 1910);

whether extraction of oil and gas by trustees, life estate holders, and general lessees amounts to waste of the estate;¹³² and cases determining tax liabilities.¹³³

Cases in which courts interpreted lease rights in disputes between individuals who claimed development rights in the *same parcels* represent the most frequently cited inapplicable decisions. Resolving these disputes, courts took various views on the issue of title to the resources in the ground and used the concept of title.¹³⁴ But these decisions simply do not tell us anything useful about the rights of surface owners against each other. Cases that determined the development rights of surface owners decided issues that are distinct from questions about the alienability of whatever these rights are. Any discussion of issues surrounding the sale or lease of oil and gas rights is separate from issues about the nature of property rights with respect to neighbors. The Texas Supreme Court observed in an early case that the questions posed in these two classes of cases are distinct:

The general question of whether one landowner is entitled to damages for oil or water drawn from his land by a well sunk by

Gillette v. Mitchell, 214 S.W. 619, 622 (Tex. Civ. App. 1918); Jennings v. S. Carbon Co., 80 S.E. 368, 372 (W. Va. 1913); Hall v. S. Penn Oil Co., 76 S.E. 124, 124–25 (W. Va. 1912); Rymer v. S. Penn Oil Co., 46 S.E. 559, 565 (W. Va. 1904).

132. Isom v. Rex Crude Oil Co., 82 P. 317, 318 (Cal. 1905); Ohio Oil Co. v. Daughetee, 88 N.E. 818, 820 (Ill. 1909); Rupel v. Ohio Oil Co., 95 N.E. 225, 226 (Ind. 1911); Lanyon Zinc Co. v. Freeman, 75 P. 995, 997 (Kan. 1904); Gerkins v. Ky. Salt Co., 39 S.W. 444, 444 (Ky. 1897); Marshall v. Mellon, 36 A. 201, 201 (Pa. 1897); Appeal of Stoughton, 88 Pa. 198, 201–02 (1878); Haskell v. Sutton, 44 S.E. 533, 538 (W. Va. 1903); Wilson v. Youst, 28 S.E. 781, 781 (W. Va. 1897); Williamson v. Jones, 19 S.E. 436, 436 (W. Va. 1894); Wood Cnty. Petroleum Co. v. W. Va. Transp. Co., 28 W. Va. 210, 219 (1886).
133. Stephens Cnty. v. Mid-Kan. Oil & Gas Co., 254 S.W. 290 (Tex. 1923); Texas Co. v. Daugherty, 176 S.W. 717 (Tex. 1915).
134. Some states do not delay title under an ownership-in-place theory of ownership of subsurface pool resources. *See, e.g., Mid-Kan. Oil & Gas*, 254 S.W. at 292 (“[G]as and oil in place are minerals and realty, subject to ownership, severance, and sale, while embedded in the sands or rocks beneath the earth’s surface, in like manner and to the same extent as is coal or any other solid mineral.”); *Edwards Aquifer Auth. v. Day*, 369 S.W.3d 814, 831–32 (Tex. 2012) (determining as a matter of first impression in a takings case that groundwater is owned in place). Other states delay title under a no-ownership-in-place theory. *See, e.g., Sun Oil Co. v. Oswell*, 62 So. 2d 783, 787 (Ala. 1953); *NCNB Tex. Nat’l Bank, N.A. v. West*, 631 So. 2d 212, 223 (Ala. 1993); *Triger v. Carter Oil Co.*, 23 N.E.2d 55, 56 (Ill. 1939); *Ohio Oil Co. v. Daughetee*, 88 N.E. 818, 820 (Ill. 1909); *Watford Oil & Gas Co. v. Shipman*, 84 N.E. 53, 54 (Ill. 1908); *State v. Ohio Oil Co.*, 49 N.E. 809, 812 (Ind. 1898).

an adjoining landowner on his own land is very different from the question of whether the owner of a part of a tract of land from which prior to his acquisition of title a third person had acquired from the former owner the exclusive right to take oil therefrom is entitled to his proportionate share of the oil so taken.¹³⁵

The court not only noticed the distinction, it explicitly stated that the decisions regarding the questions in the neighbor dispute cases are not “controlling upon the question presented” in lease and sale dispute cases.¹³⁶ The doctrines and decisions that resolve the myriad of disputes over the authority to exploit a particular parcel do not apply to disputes between neighbors—just as the law governing disputes over the ownership of horses do not apply to the determination of an owner’s liability for damage caused by the owner’s horse. The cases may share subject matter and language, but no more.

B. Subsurface Resource Pools Are Shared Property and Surface Owners Are Tenants in Common Without Accounting Rights

Properly understood, common law decisions recognize the shared ownership of subsurface resource pools, just as with surface resource pools, because of the migratory character of the resources.

1. Common Law Coordinates More Decision Making Among Shared Owners than Decision Making Among Neighbors

There is an important and evident distinction in the role of the common law in decisional coordination among individual owners and among individuals whose unity of interest in a common resource both justifies and requires greater legal oversight. The scope of common law decisional coordination between neighboring individual owners is less than between those who share ownership of resources.

The greater coordination between shared owners can be found both in the regulation of property whose current ownership is divided among

135. *Gillette v. Mitchell*, 214 S.W. 619, 622 (Tex. Civ. App. 1918). Along these lines, a plaintiff’s attempted attack on the validity of an oil rights conveyance based on “[t]he doctrine that the owner of land has no property right in the oil or gas beneath the surface until he has reduced it to possession” was succinctly rebuffed by the Supreme Court of Louisiana:

The doctrine . . . in no manner denies to such owner the exclusive right to the use of the surface for the purposes of such reduction [of oil and gas to possession], or for any other purpose . . . but, to the contrary, concedes that right, as inherent in the title to the land, . . . and the right may be sold, as may be any other right, and may carry with it the right to the oil and gas that may be found and reduced to possession.

Frost-Johnson Lumber Co. v. Salling’s Heirs, 91 So. 207, 213 (La. 1920).

136. *Gillette*, 214 S.W. at 622.

several individuals and in the regulation of property whose ownership is divided over time, such as the relationship between a lessor and a lessee or a life tenant and a remainderman.¹³⁷ The waste action is recognized as between co-owners and as between present and future interest holders, but almost never recognized between neighbors.¹³⁸

If the private ownership of neighboring parcels is individuated, there is no inherent unity of interest in decision making; society recognizes individual ownership precisely because it wants an owner's decisions to reflect her individual preferences. Neighbors exercise a vast array of decisional authority without affecting one another in a legally cognizable way. Also, neighbors make a vast number of decisions that strongly affect other neighbors, but the decisions are fewer and their effect is dissipated in the surrounding community. Neighbors have common interests, but these are diffused into an ill-defined class of individuals. And, as the academic literature as of late constantly reminds us, the desires of the community are a diverse thicket, not a one-dimensional set of either positive or negative contributions to the local value of property.¹³⁹ Thus, there is no immediate, tangible, and limited unity of interest that both impels and justifies judicial coordination. Rather, the effect of decision making by individuated property owners is left to legislative and private governance.

Moreover, when resources are individually owned, the law relies on the market to coordinate land use decisions. An individual owner whose land use decisions upset neighbors generally also upsets the property's potential buyers. As a result, the cost of that decision is often internalized to the person who makes the decision. As long as the cost is internalized, the market will coordinate land use decisions by discouraging decisions the community (through the market) does not value and rewarding decisions the community (through the market) does value.

137. Emily Sherwin, *Two- and Three-Dimensional Property Rights*, 29 ARIZ. ST. L.J. 1075, 1093-94 (1997) (noting that most modern property rights are defined by the object and the conditions for its ownership but not the incidents of ownership, leaving that final piece subject to judicial determination). As a corollary to this indeterminate framework, courts in the exercise of their discretion more readily consider other shared owners' interests than neighbors' interest when defining the incidents of property ownership.

138. *But see, e.g.,* Eyerman v. Mercantile Trust Co., 524 S.W.2d 210, 217 (Mo. Ct. App. 1975) (enjoining the demolition of decedent's house, which she had prescribed in her will, based on the harmful effects of the demolition on the community, including the neighbors who brought the action).

139. *See* Roderick M. Hills, Jr. & David N. Schleicher, *Balancing the "Zoning Budget,"* 62 CASE W. RES. L. REV. 81, 97 (2011) (citing KENNETH J. ARROW, SOCIAL CHOICE AND INDIVIDUAL VALUES 22-25 (2d ed. 1963)).

Because of these factors, many activities of individual owners that have the knowing effect of injuring a neighbor's quiet enjoyment of property are not actionable. Thus, the owners of the Eden Roc Hotel had no recourse when the neighboring Fontainebleau Hotel erected a residential tower that cast a shadow over the Eden Roc's pool at midafternoon.¹⁴⁰ Nuisance law itself provides no cause of action for interferences that are judged to be nonsignificant. By contrast, the common law applies a higher standard of conduct for dealing with one another when there is shared ownership. The unity of interest makes the judicial supervision of conduct to prohibit acts solely motivated by ill will appropriate.

The common law regulation of shared rather than individuated ownership is more than simply a prohibition of intrinsically wrongful conduct from a golden rule perspective. Instead, the common law regulation of shared ownership regulates decisions that are wrongful only because they are opposed to the unity of interest inherent in shared ownership. The failure to improve one's neighborhood by purchasing a high quality mailbox may be, for the sake of demonstration, contrary to the communal interest of individual owners, but it would not be actionable at common law on that ground alone because there is no additional element of wrongdoing. But a co-owner who leases commonly owned property for far below market value may create actionable waste because it is contrary to the united interest of the common owners in deriving value from the property, not because suboptimal leasing is in itself wrongdoing.

2. Surface Owners Share Ownership of Subsurface Resource Pools Because the Resources are Migratory

The common law recognition of the causes of action for malicious interference, waste, and unreasonable exploitation coordinates decision making among surface owners not simply as neighbors but as individuals whose unity of interest in a commonly owned resource justifies and requires judicial oversight.

The coordination problem inherent in subsurface resource pools arises because the decisions of surface owners (or their licensees) are so interdependent that it is not possible for society to rely on

140. *Fontainebleau Hotel Corp. v. Forty-Five Twenty-Five, Inc.*, 114 So. 2d 357, 358 (Fla. Dist. Ct. App. 1959). For Professor Gerhart's property casebook, *Property: Our Social Institution*, we sought a picture of the shadow cast over the pool. As soon as the subject was broached with a member of the Eden Roc staff, she immediately responded "you are referring to the spite wall." She also indicated that finding a picture in the archive would be difficult, as any pictures showing the shadow over the pool would have been destroyed. Luckily, she found one picture that shows the shadow creeping ominously toward the pool in early afternoon. See PETER M. GERHART, *PROPERTY: OUR SOCIAL INSTITUTION* 355 (2012), available at www.availableat.org.

independent and loosely coordinated decisions, as is true for individually owned property. Each surface owner's decisions about where and how to extract resources have a potentially immediate and direct impact on the well-being of other surface owners through their ability to extract wealth from the subsurface resource pool. Like co-owners of property, each surface owner has an interest in the pool that cannot be easily separated from the interests of other surface owners. Accordingly, courts have recognized that—because subsurface resource pools are migratory—decisions about the use of the resource are interdependent, and courts have thus required that exploitation decisions have a reasonable basis.

According to the shared property paradigm, the surface owners own subsurface resource pools much like the ownership of tenants in common.¹⁴¹ Indeed, this proposition is explicitly stated in early cases. The Kentucky Court of Appeals in *Louisville Gas Co. v. Kentucky Heating Co.* gives perhaps the best exposition of the nature of a surface owner's rights in subsurface resource pools and the judicially enforceable obligations surface owners have among one another:

The right of the surface owners to take gas from subjacent fields or reservoirs is a right in common. There is no property in the gas until it is taken. Before it is taken it is fugitive in its nature, and belongs in common to the owners of the surface. The right of the owners to take it is without stint; the only limitation being that it must be taken for a lawful purpose and in a reasonable manner. Each tenant in common is restricted to a reasonable use of this right, and each is entitled to the natural flow of the gas from the subjacent fields, and any unlawful exercise of this right, by any tenant in common, which results in injury to the natural right of any other tenant or surface owner, is an actionable wrong.¹⁴²

141. Just as tenants in common have an undivided interest in the property, sharing owners have a unity of interest in the pool because exploitation of any part of the pool potentially affects every part of the pool. Just as tenants in common have individual interests in the property by virtue of their right to seek a partition, sharing owners have an individual interest by virtue of being surface owners. For tenants in common the individual interest is determined by the conveyance to the tenants. For sharing owners, the individual interest is determined by the percentage of relevant surface area each owner has.

142. *Louisville Gas Co. v. Ky. Heating Co.*, 111 S.W. 374, 376 (Ky. 1908). This exposition is probably so superior because Kentucky did not adopt *Acton* until fifteen years later. *Nourse v. Andrews*, 255 S.W. 84, 86 (Ky. 1923). Typically, adoption of a nuisance exception for injuries to subsurface resource pools preceded common law consideration of a dispute over the reasonableness of exploitation of a subsurface resource pools. As this Part demonstrates, recognition of shared ownership is not inconsistent with this nuisance exception because it results only in an

Similarly, in *Manufacturers' Gas & Oil Co. v. Indiana Natural Gas & Oil Co.*, the Indiana Supreme Court refers to common ownership of a common reservoir, not tenancy in common, but it is equally clear that the ownership of subsurface resource pools is shared:

The final conclusion of the court is that one common owner of the gas in the common reservoir cannot divest all the others of their rights, without wrongdoing. The acts of 1891 and 1893 are an express recognition by the legislature of the qualified ownership of the common owners in the gas in the common reservoir, and any act therein forbidden may be, according to the circumstances, the subject of a suit at law or a proceeding in equity by the person injured, as well as the foundation of a public prosecution. Independently, however, of any statute, for the reason already stated, the common owners of the gas in the common reservoir, separately or together, have the right to enjoin any and all acts of another owner which will materially injure, or which will involve the destruction of, the property in the common fund, or supply of gas.¹⁴³

Other courts and commentators have found another way to express shared ownership using the framework of correlative rights.¹⁴⁴ The Florida Supreme Court explains:

Property owned by one party may be so situated and conditioned with reference to the property of another as that the rights of ownership and the uses of such properties are interdependent or correlative. In such cases each owner should so reasonably use his property as not to injure the property rights of others.

The property rights relative to the passage of waters that naturally percolate through the land of one owner to and through

elimination of accounting. Still, accounting is a right almost universally available for tenants in common, and therefore it makes sense that the prior foreclosure of the accounting remedy in a state would cramp the language in subsequent opinions recognizing other rights of shared ownership between surface owners.

143. *Mfrs.' Gas & Oil Co. v. Ind. Natural Gas & Oil Co.*, 57 N.E. 912, 917 (Ind. 1900).
144. See generally *Wronski v. Sun Oil Co.*, 279 N.W.2d 564 (Mich. Ct. App. 1979); *Edwards Aquifer Auth. v. Day*, 369 S.W.3d 814 (Tex. 2012); *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1 (Tex. 2008); 1 EUGENE KUNTZ, *A TREATISE ON THE LAW OF OIL AND GAS* § 4.3, at 120–22 (1987); Kramer & Anderson, *supra* note 93; R.O. Kellam, *A Century of Correlative Rights*, 12 BAYLOR L. REV. 1 (1960); Theresa D. Poindexter, Comment, *Correlative Rights Doctrine, Not the Rule of Capture, Provides Correct Analysis for Resolving Hydraulic Fracturing Cases*, 48 WASHBURN L.J. 755 (2009).

the land of another owner are correlative; and each landowner is restricted to a reasonable use of his property as it affects subsurface waters passing to or from the land of another.¹⁴⁵

The correlative rights concept unnecessarily and misleadingly duplicates the concept of shared rights. Tenants in common and concurrent and future interest holders have the same correlative rights as surface owners over a common pool. Using terms like correlative rights unnecessarily diffuses the common law and makes the law in one area appear to be different from the law in another area, obfuscating the unity of the law. Advocates and judges who evaluate disputes between surface owners over exploitation decisions ought to understand that the rights are akin to rights of tenants in common and present and future interest holders, so that they do not unnecessarily limit the scope of their research and consideration.

3. Rights of Shared Owners of Subsurface Resource Pools Are Limited (Not Eliminated) Because the Resources Are Hidden

Courts have recognized nearly the full panoply of causes of action available between shared owners of property that are not generally available between neighbors: malicious interference, waste, and unreasonable use. The only stick in the bundle of shared ownership rights that is generally available to tenants in common but not to surface owners of subsurface resource pools is a cause of action that would require one sharing owner to account to the other sharing owners for the value of the resource that the owner displaced.¹⁴⁶ But this is understandable from the nature of the resource. As we have shown, courts have generally refused to hear causes of action for interferences with subsurface resource pools because the hidden character of the resources limits the judicial capacity to effectively determine liability and provide redress. The Supreme Court of Louisiana put it perfectly: “A review of the cases . . . shows that damages were not allowed because of the uncertain and speculative nature of the loss complained

145. *Cason v. Fla. Power Co.*, 76 So. 535, 536 (Fla. 1917).

146. *Gruger v. Phillips Petroleum Co.*, 135 P.2d 485, 488–89 (Okla. 1943) (“Assuming that there might be circumstances . . . which would authorize the district court, in the exercise of its equitable powers, to grant relief to such owner, which question is not now before us and we do not decide, we think it is clear that no such state of facts is stated in the petition. We conclude that the petition does not contain a statement of facts making it the duty of the defendant to account to it for oil and gas alleged to have been drained from under their lots, and the demurrer was properly sustained.”); *Canada v. City of Shawnee*, 64 P.2d 694, 696 (Okla. 1936) (“This does not mean that there shall be an apportionment of subterranean percolating water between adjacent landowners, for such a thing is often, if not always, impossible . . .”).

of.”¹⁴⁷ It follows that as the technology of determining the flow of subsurface resources improves, courts should be increasingly willing to afford accounting rights by requiring a fair division of the value of extractions from a subsurface resource pool.¹⁴⁸

Has technology improved since *Acton* was decided in 1843? Apparently yes. The Texas Supreme Court as early as 1935 observed:

[W]hen an oil field has been fairly tested and developed, experts can determine approximately the amount of oil and gas in place in a common pool, and can also equitably determine the amount of oil and gas recoverable by the owner of each tract of land under certain operating conditions.¹⁴⁹

Yet accountings are still not generally afforded nearly eighty years later, despite the fact that technology has improved even further in the meantime.¹⁵⁰ It appears that judicial perceptions of the capacity to provide subsurface resource accounting have not caught up to advancing technology, but this might be attributable in part to the fact that the conventional views trace the lack of remedy for drainage to the migratory, rather than the hidden, character of the subsurface resources. Once it is understood that the hidden character of the resources is the factor that impelled courts to refuse to order an accounting for diversion, the way should be clear to allow sharing owners to determine their ownership shares and for courts to enforce reasonable allocations.

147. *McCoy v. Ark. Natural Gas Co.*, 165 So. 632, 633 (La. 1936).

148. This does not mean that the *Acton* exception for a nuisance action would be removed for interferences that occur from flowing water. Accounting actions in oil and gas cases in a pool or shale deposit pose fewer problems for courts because they are in a determinable space and will at some point be exhausted. Some injuries from the use of subsurface resources are likely to remain *damnum absque injuria* when the diversions cannot be adequately measured.

149. *Brown v. Humble Oil & Ref. Co.*, 83 S.W.2d 935, 940 (Tex. 1935).

150. In *Coastal Oil & Gas*, an expert “testified that because of the fracing operation on the Coastal No. 1 well, 25–35% of the gas it produced drained from Share 13.” *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1, 8 (Tex. 2008).

4. The Shared Ownership of Subsurface Resource Pools Is
Constitutionally Significant

The shared nature of subsurface resource pools is evident from the seminal decision on the constitutionality of statutes that regulate oil and gas for waste, *Ohio Oil Co. v. Indiana*.¹⁵¹

The Court at the outset noted that

oil and gas are comingled and contained in a natural reservoir which lies beneath an extensive area of country, and that as thus situated the gas and oil are capable of flowing from place to place, and are hence susceptible of being drawn off by wells from any point, provided they penetrate into the reservoir. . . . From this it must necessarily come to pass that the entire volume of gas and oil is in some measure liable to be decreased by the act of any one who, within the superficial area, bores wells from the surface and strikes the reservoir containing the oil and gas.¹⁵²

The Court recognized that surface owners do not exclusively own oil and gas residing beneath their land because this degree of ownership does not arise until the surface owner achieves “dominion and control by actual possession” of the oil and gas.¹⁵³ The Court then made clear that oil and gas are not commons property, distinguishing oil and gas from the classic case of commonly owned property, “animals *ferae naturae*.” Such animals “belong to the ‘negative community;’ in other words, are public things subject to the absolute control of the State, which, although it allows them to be reduced to possession, may at its will not only regulate but wholly forbid their future taking.”¹⁵⁴ While oil and gas share some similarity to animals *ferae naturae*, the Court held they are constitutionally distinct because the “identity” between the two “is for many reasons wanting”:

In things *ferae naturae* all are endowed with the power of seeking to reduce a portion of the public property to the domain of private ownership by reducing them to possession. In the case of natural gas and oil no such right exists in the public. It is vested only in the owners in fee of the surface of the earth within the area of the gas field.¹⁵⁵

151. *Ohio Oil Co. v. Indiana*, 177 U.S. 190 (1900).

152. *Id.* at 201.

153. *Id.* at 208.

154. *Id.* at 208–09 (quoting *Geer v. Connecticut*, 161 U.S. 519, 525 (1896), *overruled by Hughes v. Oklahoma*, 441 U.S. 322 (1979)).

155. *Id.* at 209. The Supreme Court subsequently missed this crucial distinction when reviewing this portion of the case in *Walls v. Midland Carbon Co.* by reporting that in the earlier case “the analogy between

Accordingly, surface proprietors “could not be absolutely deprived of” the right to reduce oil and gas to possession that “belongs to them.”¹⁵⁶

Under this constitutional framework for takings, oil and gas in situ is not private property (because there is insufficient dominion and control by actual possession) and it is not commons property (because the rights belong only to surface owners). All that is left is to recognize the name of this constitutional class of property: shared property.¹⁵⁷ Noncompensated regulation of shared property is more

oil and gas and animals *ferae naturae* was declared.” *Walls v. Midland Carbon Co.*, 254 U.S. 300, 317 (1920). As the Court made clear in *Ohio Oil Co.*, if there were perfect analogy between oil and gas and wild animals, then oil and gas would be commons property subject to regulation at the absolute discretion of the states as sovereign authority. The Court in *Ohio Oil Co. v. Indiana* addressed the commons property regime and the analogy to wild animals because the Indiana Supreme Court upheld the waste statute on the basis of this analogy in a case cited to by the summary affirmances of both the case and the companion case below. *Ohio Oil Co. v. State*, 50 N.E. 1125 (Ind. 1898) (summarily affirming judgment with citation to *State v. Ohio Oil Co.*, 49 N.E. 809 (Ind. 1898)); *Ohio Oil Co. v. State*, 50 N.E. 1124 (Ind. 1898) (companion case below summarily affirming judgment with citation to *State v. Ohio Oil Co.*, 49 N.E. 809 (Ind. 1898)); *State v. Ohio Oil Co.*, 49 N.E. 809, 812 (Ind. 1898) (holding waste statute constitutional by analogy to commons property regulations of wild animals and fish).

156. *Id.*

157. The classification of oil and gas as shared, not common, property for constitutional purposes also limits a state’s power to regulate interstate transmission of oil and gas. *See Kan. Natural Gas Co. v. Haskell*, 172 F. 545, 564 (C.C.E.D. Okla. 1909) (“[T]he contention of defendants that the natural gas found within the territorial limits of the state is the common heritage of the people of the state, which may be conserved and preserved by the state as trustee of those things in which the people have a common interest, as flowing streams, wild animal life, etc., is unsound and must be denied.”). The states have upheld similar waste statutes before and after the decision in *Ohio Oil Co. v. Indiana*. *Townsend v. State*, 47 N.E. 19, 20–23 (Ind. 1897) (holding waste statute constitutional by analogy to various commons property regulations, namely wild animals, fish, and beach sand); *People ex rel. Stevenot v. Associated Oil Co.*, 294 P. 717, 723 (Cal. 1930) (in bank) (“Whatever refinements may be suggested as to the definition of the nature of the property right in gas and oil beneath the surface and uncaptured, we are entirely satisfied that the waste of these natural resources may be regulated and the unreasonable waste thereof may be prohibited in the exercise of the police power of the state . . .”). The California Supreme Court commented, perhaps inaccurately, on the nature of the class of property recognized in *Ohio Oil Co. v. Indiana*:

The decision in that case defines the so-called correlative right not necessarily as a right to a fixed distributive or proportional share of the oil and gas underlying the surface, which no other owner of soil overlying the same reservoir may take and use beneficially, but as a coequal right to take whatever of the oil

permissible than regulation of private property precisely because it is shared property.¹⁵⁸

III. PRIVATE GOVERNANCE OF SHARED PROPERTY

The shared property paradigm suggests that decisions about the exploitation of the subsurface pool should be made in a unified way that takes into account the joint interests of the shared owners in the value of the pool, while protecting the individual interests of surface owners in the portion of pool that underlies their property. Assuming that a single surface owner or lessee cannot acquire all the rights in the pool, this paradigm suggests that several principles ought to inform the legal approach to shared property. Significantly, because the common law has developed with an intuitive sense of the rights and responsibilities of sharing owners, no major common law decisions need to be overruled in order to adopt those principles.

In order to establish private governance of the exploitation of their shared property, sharing owners ought to agree on the percentage of ownership to be held by each surface owner in advance of drilling. Although the hidden nature of the resource once made that task impossible, modern seismic technology has advanced to a level that suggests that assigning shares to the sharing owners is now reasonably feasible.¹⁵⁹ Undoubtedly, the shares might not be determined with scientific precision and would not be free from doubt, so sharing owners would want to build in mechanisms for adjusting the shares as new information about the precise location of the resource develops, but negotiations toward an agreement in principle should be possible, and courts are available to help resolve factual disputes.

The law should function to encourage sharing owners to establish a governance mechanism that would allow them to make unified decisions about whether, when, and how they exploit the resource.

and gas can be captured, so long as waste, as defined by the statute, is not committed.

People ex rel. Stevenot, 294 P. at 722.

158. The limits of noncompensated regulation of shared resources were explored in *Bernstein v. Bush*, 177 P.2d 913, 918 (Cal. 1947) (in bank) (“[D]isapproval of the petitioners’ proposal to drill a well in accordance with the notice of intention on file, if effective to prevent such drilling, would amount to a deprivation of the petitioners’ right, co-equal with the right of surrounding owners and lessees, to recover their fair share of the oil and gas from the common source of supply, and consequently would infringe upon the constitutional guaranties invoked.”).

159. For example, in *Coastal Oil & Gas*, an expert “testified that because of the fracing operation on the Coastal No. 1 well, 25–35% of the gas it produced drained from Share 13.” *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1, 8 (Tex. 2008).

The precise governance mechanism would vary with the number of sharing owners. One model for shared governance comes from the governance mechanisms used by common interest communities. Under this model, sharing owners would be assigned votes in proportion to the amount of the pool underlying their property; on the basis of those votes, they would adopt a charter outlining the basic rights and responsibilities of the shared ownership and establish a governing body to make exploitation decisions. The owners would then elect individuals to the governing body. The governing body would make exploitation decisions on behalf of the sharing owners, subject to judicial review that would determine whether the decisions conformed to reasonable governing regulations, were themselves reasonable, and followed principles of appropriate process (including, for important decisions, the protection of minority rights).

The shared owners can choose between two governance models, a unified exploitation model or a decentralized exploitation model. Under the unified exploitation model, the governing body would itself exploit the pool on behalf of the shared owners, but individual interests would be protected by the requirement of reasonable decisions, accounting, and judicial review. Under the decentralized exploitation model, the individual owners would separately exploit the pool on their own behalf according to rules and regulations established by the governing body.¹⁶⁰ Governing bodies under both unified and decentralized models would establish procedures for assigning “ownership” rights to the pool (based on the ownership of surface property) and would adjust those rights in response to new information generated from new technology.

We anticipate that private governance structures can be privately established and operated (subject to judicial review), with a minimum

160. Macaulay offers an apt description of an early example of one such regulated governance regime:

There was a Turkey Company, the members of which contributed to a general fund, and had in return the exclusive privilege of trafficking with the Levant: but those members trafficked, each on his own account: they forestalled each other; they undersold each other: one became rich; another became bankrupt. The corporation meanwhile watched over the common interest of all the members, furnished the crown with the means of maintaining an embassy at Constantinople, and placed at several important ports consuls and vice-consuls, whose business was to keep the Pacha and the Cadi in good-humour, and to arbitrate in disputes among Englishmen.

5 THOMAS BABINGTON MACAULAY, *THE HISTORY OF ENGLAND FROM THE ACCESSION OF JAMES THE SECOND* 307 (1899). The Old East India Company was a unit governance regime, but the New East India Company was structured according to the Turkey Company model as a regulated governance regime. *Id.*

of legislative input needed to guide how the governing bodies are established and operated. Again, the model of the common interest community suggests that private agreements subject to judicial review are superior to legislative regulation because the sharing owners know best how to make exploitation decisions and because the decisions are subject to well-developed standards of reasonableness that lend themselves to development and application along common law lines.

There might, however, be one area in which legislative intervention would be important. The ability of sharing owners to reach agreement on a governance mechanism and joint decision making would be subject to the holdout problem. Owners might feign reluctance to exploit the shared property in order to gain an advantage in the negotiations. Therefore, private governance might require a mechanism for ensuring that if a large majority of the owners of a common pool could agree on an allocation of shares and an appropriate governance mechanism, other owners would be forced to accept the decisions of the majority. That mechanism would induce holdout owners to negotiate in good faith in order to protect their interests and have an impact on the unified decisions.

CONCLUSION

The law's need to accommodate the particular and the general—to understand the outcome in particular cases in terms of general directions that others can follow—requires legal theory to move easily between the pieces of a mosaic and the overall picture the pieces portray. This requires theory that can move beyond general principles whose content is unexplored and undefined, while simultaneously capturing the relationship between the details in a way that binds them together into a coherent pattern. For this reason, successful theory depends on a framework or paradigm that captures the relevant variables and their relationships to each other. When formed at too diffuse a level or when focused on too many particulars, theory provides insufficient guidance; when focused on too few particulars, theory distorts reality.

The theory applicable to subsurface resource pools has never presented a comfortable picture because it has continually vacillated between theories of individual ownership and common ownership that has left the law's imprint smudged and confused. Attempts to bring the law into focus by espousing theories that focus on one feature over others—such as capture or location—or by giving up on theory and allowing resource exploitation to be understood as a race (the “Drill, baby, drill!” v) have given the law applicable to subsurface resource pools a vacillating, uneven, and opaque character.

Because the widespread deployment of horizontal slickwater fracturing has threatened traditional property interests by requiring the driller to cross surface boundaries, in this Article we have taken a fresh look at the cases that determine rights and responsibilities to

subsurface resource pools. What we have found is that common law courts have implicitly applied a theory of shared ownership to controversies arising from the exploitation of subsurface resource pools, one that they modified only to accommodate the difficulty of tracing the flow of hidden resources. This finding ought to change the way we understand the law applicable to subsurface resource pools, for it allows us to integrate into a single theory—a theory of shared resources—that actualizes a legal approach to the many controversies that such resources generate.

Under the theory of shared resources, owners of surface property over a subsurface pool have a unity of interest in the exploitation of the pool that requires each surface owner to act as if she were part of unified ownership, but each surface owner has an individual interest in the portion of the pool underlying her property. This is the paradigm that common law courts have largely applied, and it is the theory that should govern our understanding of, and legal approach to, horizontal slickwater fracturing. Moreover, now that seismic technology has largely removed the hidden nature of resource pools, courts can move to fully implement the shared resources paradigm, for now the individual shares of the resource pool can be determined with a fair degree of accuracy.

Significantly, the shared property theory can largely be implemented through private agreements, rather than legislative or regulatory commission dictates. Because surface owners have a unity of interest and neither their number nor their idiosyncratic interests are great, most of the issues relating to unified exploitation can be worked out by negotiations between surface owners acting reasonably and in good faith, and subject only to judicial review to evaluate the reasonableness of the agreements and to address controversies that cannot be resolved by the owners themselves.



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