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The Public Trust Doctrine: Some Jurisprudential Variations and Their Implications

Thomas W. Merrill*

INTRODUCTION

My topic is the public trust doctrine, something of great intellectual interest to property and environmental scholars and of considerable practical significance in the State of Hawai'i. Most commentary on the public trust doctrine seeks to articulate a single "correct" view of what kinds of resources are protected by the doctrine and what sorts of things it protects against.[1] The U.S. Supreme Court has made clear, however, that the public trust doctrine is based on state law.[2] Perhaps not surprisingly, therefore, the states have come up with a number of variations on the doctrine. I cannot begin to describe all the variations in one lecture. Instead, my thesis today is that there are three different jurisprudential foundations for the public trust doctrine, and that these different jurisprudential foundations have important implications for the scope of the doctrine, who enforces it, and how amenable it is to change over time. The three jurisprudential variations I call the title theory, the clear statement theory, and the constitutional theory.

I will illustrate the three theories by commenting on the public trust doctrine of three states: Illinois, New York, and Hawai'i. Illinois follows the title theory. This holds that the state's title to certain resources is impressed by a trust in favor of particular public uses. New York follows the clear statement theory. This holds that certain resources are subject to a presumption that they will be devoted to particular public uses unless the state legislature specifically legislates to the contrary. Hawai'i follows the constitutional theory. This holds that the state constitution mandates that certain resources be devoted to particular public uses.

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* Charles Evans Hughes Professor, Columbia Law School. This is a revised version of the Gifford Lecture given at the Richardson School of Law, November 5, 2015. Many thanks to David Callies for guiding me through the material on Hawaii's public trust law.

[1] *See, e.g.*, James L. Huffman, *A Fish Out of Water: The Public Trust Doctrine in a Constitutional Democracy*, 19 ENVTL. L. 527 (1989).

[2] Phillips Petroleum Co. v. Mississippi, 484 U.S. 469, 482-84 (1988); Shively v. Bowlby, 152 U.S. 1, 40-46, 57-58 (1894).

Superficially considered, these are three paths to the same destination. All three conceptions of the public trust identify a set of resources and require that they be devoted to particular uses identified as public. They take the form: If A, that is, within the set of protected resources, then B, no deviation from public uses. Moreover, both the set of resources and the particular permitted uses are described in highly general terms. Thus, they function like empty vessels waiting to be filled by judicial interpretation. I readily concede these points of similarity. In any of its variations, the public trust doctrine suffers from vagueness and invites a considerable degree of judicial lawmaking.

Nevertheless, jurisprudential roots matter. Take the set of resources subject to the doctrine. The title theory followed in Illinois is rooted in history, specifically in the provenance or historical origins of certain resources. This tends to generate a narrow set of resources subject to the doctrine. In Illinois, the doctrine is tightly linked to navigable waterways and basically applies only to attempts to reclaim land by filling navigable waters.[3] The clear statement theory followed in New York is much more susceptible to extension to different types of resources by analogical reasoning. Thus, we find that in New York the doctrine applies not only to navigable waterways and associated lands but also to public parks.[4] The scope of the constitutional theory depends on the language in the state constitution. The Hawaiian constitution says that "[a]ll public natural resources" are held in trust by the state for the benefit of the people,[5] and the Hawai'i Supreme Court has interpreted "public natural resources" to include all water resources, including ground water on privately-owned land.[6] So in Hawai'i, at least with respect to water, the scope of the doctrine is very broad.

The jurisprudential conception also has implications for institutional roles. Under the title theory followed in Illinois, the Illinois Supreme Court has held that the state legislature is the trustee of protected resources.[7] The courts will review the decisions of the legislature, but they do so under a standard of review that has never been definitively spelled out but sometimes gives deference to the trustee. Under the clear statement theory followed in New York, the legislature is even more clearly in control of the disposition of public trust resources. This is because the legislature can always enact a statute specifically authorizing a particular use or disposition

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[3] *See* Illinois Cent. R. Co. v. Illinois, 146 U.S. 387 (1892).

[4] *See* Brooklyn Park Comm'rs v. Armstrong, 45 N.Y. 234 (1871).

[5] HAW. CONST. art XI, § 1.

[6] *See In re* Water Use Permit Applications, 94. Haw. 97, 143, 9 P.3d 409, 455 (Haw. 2000) [hereinafter *Waiahole Ditch*].

[7] People *ex rel.* Attorney Gen. v. Kirk, 45 N.E. 830, 835 (1896).

of public trust resources, giving it the last word on public trust issues.[8] In Hawai'i, in contrast, the state supreme court has declared that because the public trust doctrine is grounded in the state constitution, "the ultimate authority to interpret and defend the public trust in Hawai'i rests with the courts of the state."[9] In Hawai'i, the judiciary is fully in charge of the public trust.

The jurisprudential foundation also affects the ability to change the status of resources as being protected by the public trust. Under the title theory, the state basically has no way to change the public trust status of a resource. The trust status is baked into the title in which the resource is held. The clear statement theory offers a ready means of escaping from the public obligation. The state legislature simply has to enact a statue that clearly overrides the trust. The constitutional theory presents an intermediate degree of difficulty in terms of changing the status of resources. The state could amend its constitution to modify the status of particular resources. For example, Hawai'i could amend its constitution to clarify that "public natural resources" includes only surface water, not ground water. State constitutional amendments are typically more difficult to achieve than legislative changes, but they are not so difficult to achieve as changing a title baked into a resource.

I. ILLINOIS

I begin with Illinois, since this is where the American public trust doctrine basically got started. The launch vehicle was the momentous *Illinois Central* case of 1892.[10]

Some background is necessary.[11] In 1852, the center of the City of Chicago ("City") abutting Lake Michigan was washing away.[12] A breakwater was needed, but no agreement could be reached on who would pay for it. The Illinois Central Railroad ("Illinois Central") needed the consent of the City to extend its line into the City. A deal was reached whereby the railroad could enter along the lakefront, provided it agreed to build and maintain a breakwater to protect the lakefront from erosion.[13]

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[8] *See* Friends of Van Cortlandt Park v. City of New York, 750 N.E. 2d 1050, 1053-54 (N.Y. 2001).

[9] *Waiahole Ditch*, 94 Haw. at 143, 9 P.3d at 455.

[10] *Illinois Cent.*, 146 U.S. 387.

[11] *See* Joseph D. Kearney & Thomas W. Merrill, *The Origins of the American Public Trust Doctrine: What Really Happened in* Illinois Central, 71 U. CHI. L. REV. 799 (2004).

[12] *Id.* at 817.

[13] *Id.*

The result was that the Illinois Central entered the City on tracks built on trestles in the Lake. At the time the railroad's facilities were constructed, a lawyer well-versed in Illinois law would have opined that the bed of Lake Michigan was owned by the riparian owners of the land along the shore. The City was understood to be the owner of the land along the shore of the Lake, so the City was assumed to have the authority to convey rights to the railroad to build in the Lake.

Starting in 1860, however, doubt began to grow about whether the Illinois courts might eventually hold that the beds of lakes, at least a huge lake like Lake Michigan, were owned by the State of Illinois. By 1867, doubts about this had grown to the point that a number of entrepreneurs in the City of Chicago, including a group led by an attorney named Melville Fuller, the future Chief Justice of the U.S. Supreme Court, began to lobby the state legislature in Springfield in an attempt to secure a grant of the bed of Lake Michigan off the shore of Chicago, in order to construct an outer harbor that would relieve congestion in the Chicago River.[14]

These lobbying efforts raised alarm within the corporate offices of the Illinois Central. Such a grant might call into question the railroad's right to continue to operate along the lakefront; at the very least, it would preclude any further expansion by the railroad into the Lake. At least in part for defensive reasons, the railroad launched its own campaign to secure a grant of the lakebed for itself, which succeeded. A statute called the Lake Front Act was passed over the governor's veto in 1869, which conveyed approximately 1,000 acres of submerged land to the Illinois Central for purposes of constructing an outer harbor.[15]

Opposition to the railroad controlling an outer harbor remained intense in Chicago, however, and hostility to railroads in general mounted when the economy went into recession starting in 1872. The combination of urban hostility and rural populism, embodied in the Granger movement, proved irresistible, and in 1873 the Lake Front Act was repealed by the legislature.[16]

The effect of the repeal was to confuse an already confusing picture regarding the rights to the submerged land along the lakefront. The State of Illinois, the City, the United States Government, and the Illinois Central all advanced legal arguments in support of their right to control and develop the lakefront. The Illinois Central's claim was based on a theory of vested rights. The U.S. Supreme Court had held in *Fletcher v. Peck*[17] earlier in the nineteenth century that a completed grant of land by a state could not be

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[14] *Id.* at 839.
[15] *Id.* at 860.
[16] *Id.* at 910.
[17] 10 U.S. 87 (1810).

repealed without violating the Contracts Clause of Article I Section 10 of the Constitution.[18] The railroad's lawyers insisted that this principle was directly applicable to the State's 1869 grant of the outer harbor to the railroad, making the 1873 repeal a nullity.[19]

The property rights dispute led to a ten-year standoff. Eventually, litigation was brought to clear up the question. The matter slowly wound its way to the U.S. Supreme Court. Writing for a bare majority in 1892, Justice Stephen Field held that the State had title to the bed of Lake Michigan.[20] However, he said it was "a title different in character from that which the State holds in lands intended for sale."[21] Rather, it was a title "held in trust for the people of the State, that they may enjoy the navigation of the waters, carry on commerce over them, and have liberty of fishing therein, freed from the obstruction or interference of private parties."[22] Justice Field made clear that this trust did not bar all transfers of submerged land to private parties.[23] No objection could be made to the grant of small parcels of submerged land for the construction of wharves, docks, and piers, which are aids to navigation and commerce.[24] But the State could not, consistent with the trust, abdicate its general control "over lands under the navigable waters of an entire harbor or bay, or of a sea or lake."[25] Any attempt to make such a large grant was, "if not absolutely void on its face . . . subject to revocation."[26] Accordingly, the railroad could claim no vested rights in such a grant, and its repeal did not violate the Constitution.[27]

Several observations should be made about the invocation of what came to be called the public trust doctrine in *Illinois Central*. First, it is quite clear that the trust attached to land owned by the State beneath navigable waters, and that its purpose was to preserve the public's right to engage in navigation, commerce, and fishing on these waters.[28] There was no suggestion that the trust extended to other state owned lands, like parks, or that the trust was designed to advance environmental or preservationist goals.[29]

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[18] *Id.*
[19] Illinois v. Illinois Cent. R.R. Co., 33 F. 730, 774 (1888).
[20] *Illinois Cent.*, 146 U.S. at 463.
[21] *Id.* at 452.
[22] *Id.* at 467-68.
[23] *Id.* at 463.
[24] *Id.*
[25] *Id.* at 452-53.
[26] *Id.* at 453.
[27] *Id.* at 463-64.
[28] *Id.* at 452.
[29] *Id.* at 452-56.

Second, there was no discussion of the source in law for this trust.[30] The fact that the trust attached to the State's title to the land, and that the land was granted to the State by the federal government upon statehood, would seem to suggest that the trust was grounded in federal law. But decisions both before and after *Illinois Central* insisted that the trust was a matter of state law.[31]

Third, it was unclear who was the trustee. Was it the state legislature, or was it the courts? If it was the state legislature, how much deference, if any, should the courts give to the legislature?

A few years later, in a decision called *People ex rel. Attorney Gen. v. Kirk*,[32] the Illinois Supreme Court resolved the question about the identity of the trustee.[33] It was the state legislature. The court said

> [t]he legislature represents not only the state, which holds the title which at common law was vested in the crown, but the legislature also represents the public, for whose benefit the title is held; and in that capacity it possesses the sovereign power of parliament over the waters of the lake and the submerged lands covered by the waters.[34]

The court did not say it would give complete deference to legislature. Courts should continue to exercise independent review to determine whether a grant of land under navigable waters would interfere with the pubic rights of navigation, commerce, and fishery.[35] Consequently, the door was left open for a measure of independent judicial review.

After *Kirk*, the public trust doctrine in Illinois went into a long period of dormancy. A number of projects were undertaken that involved landfilling of Lake Michigan. But as long as these were approved by the legislature, the public trust challenge was turned away with little discussion.[36]

This changed abruptly in 1970. The pivotal case, styled *Paepcke v. Public Building Commission of Chicago*,[37] did two important things.[38] First, the court held that any member of the public, provided she was a

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[30] *Id.* at 455.

[31] *See, e.g.*, Barney v. Keokuk, 94 U.S. 324, 338 (1876); Shively v. Bowlby, 152 U.S. 1, 40-46, 57-58 (1894); Appleby v. City of New York, 271 U.S. 364, 381, 395 (1926).

[32] 45 N.E. 830, 835-36 (Ill. 1896).

[33] *Id.*

[34] *Id.*

[35] *Id.*

[36] Bowes v. City of Chicago, 120 N.E. 2d 15 (Il. 1954) (construction of water filtration plant in Lake does not violate public trust); Fairbank v. Stratton, 152 N.E. 2d 569 (Il. 1958) (construction of convention center partially on landfill in Lake does not violate public trust).

[37] 263 N.E.2d 11 (Ill. 1970).

[38] *Id.* at 18-19.

taxpayer, could challenge a public project on the ground that it violated the public trust.[39]

Second, the court expanded the public trust doctrine from one designed to preserve navigation, commerce and fishing to one concerned more broadly with any public decision to reallocate public resources "to more restricted uses or to subject public uses to the self interest of private parties."[40] In support of this reorientation, the court quoted liberally from a law review article recently published by Professor Joseph Sax, then of Michigan Law School, urging that the public trust doctrine be applied as a general administrative law remedy for challenging privatization of public resources.[41] The court agreed with Sax that it would be unwise to freeze public resources into any particular use. But it implicitly agreed with his call for close judicial scrutiny of such proposals, using the public trust doctrine as a vehicle.[42]

In the end, *Paepcke* was another defeat for advocates of the public trust. But a few short years later the court put real teeth into the doctrine.[43] The U.S. Steel Corporation obtained a grant of submerged land from the Illinois legislature in order to expand its South Shore Steel Works on the far south side of Chicago.[44] Attorney General William Scott, who had designs on running for the U.S. Senate and was anxious to secure the environmental vote, filed suit to block the project on the ground that it violated the public trust doctrine.[45] The Illinois Supreme Court agreed, and granted the requested relief in 1976.[46]

The *Scott* court acknowledged that there was scant evidence the projected landfilling would interfere with the rights enumerated in *Illinois Central* – navigation, commerce, and fishing.[47] But this did not foreclose inquiry under the public trust doctrine, since the interests protected by that doctrine were "not bound by inflexible standards."[48] In particular, the court observed that

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[39] *Id.* at 18.

[40] *Id.* at 16.

[41] Joseph L. Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471, 490 (1970).

[42] *Paepcke*, 263 N.E.2d at 15-16.

[43] *See* People *ex rel.* Scott v. Chi. Park Dist., 360 N.E.2d 773, 781 (Ill. 1976).

[44] *See id.* at 775, 780.

[45] *See* Robert Kieckhefer, *Doing Justice to William J. Scott*, ILLINOIS PERIODICALS ONLINE (Oct. 4, 1978), http://www.lib.niu.edu/1978/ii781004.html.

[46] *Scott*, 360 N.E.2d at 781.

[47] *Id.* at 782 (Underwood, J., dissenting).

[48] *Id.* at 780.

> there has developed a strong, though belated, interest in conserving natural resources and in protecting and improving our physical environment. The public has become increasingly concerned with dangers to health and life from environmental sources and more sensitive to the value and frequently, the irreplaceability of natural resources.[49]

Citing and quoting again from Professor Sax, the court held that the proposed project was simply a conveyance of public lands for private purposes.[50] Moreover, the court announced that any conveyance of trust lands "in favor of a private interest has to withstand a most critical examination."[51] The deference given the legislature in *Kirk* was replaced by something akin to strict scrutiny.

From the perspective of a public law scholar, the puzzling thing about the *Scott* decision is the source of the court's authority to invalidate a duly enacted statute of the state legislature.[52] The court did not suggest that the public trust doctrine is grounded in state constitutional law. Nor was there any suggestion the conveyance of submerged land was preempted by federal law. The mystery is solved only by going back to *Illinois Central*, and the theory that the State's title to certain land is qualified by a trust obligation.[53] Because the land is impressed with the trust, the land can never be conveyed free of the trust.[54] Under this theory, there is nothing the State can do to free itself from the trust.[55] Not even a state constitutional amendment will do the trick. The trust lasts forever.

The public trust doctrine in Illinois reached its high water mark in the 1980s, when Loyola University ("Loyola") announced plans to expand its Lake Shore campus in Rogers Park on the far north side of Chicago.[56] The Lake Shore campus was surrounded on three sides by residential and commercial property.[57] Loyola officials decided that the logical path of expansion was by filling part of the Lake. The plan called for making 18.5 acres of new land.[58] The outer perimeter would be public, and would have unrestricted access for biking, jogging, or fishing. The interior would be

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[49] *Id.* at 777, 780-81.

[50] *Id.* at 780.

[51] *Id.*

[52] *See id.* at 777-81.

[53] *Illinois Cent.*, 146 U.S. at 452-53.

[54] Kearney & Merill, *supra* note 11, at 802.

[55] *See Illinois Cent.*, 146 U.S. at 460.

[56] *See* Harold Henderson, *A Piece of Lakefront*, CHICAGO READER, (Sep. 22, 1988), http://www.chicagoreader.com/chicago/a piece of lakefront/Content?oid=872767.

[57] *See* Charles W. Shabica, *The Lake's Dubious Gain is Chicago's Loss*, CHICAGO TRIBUNE (Jul. 19, 1990), http://articles.chicagotribune.com/1990-07-19/news/9003010129_1_chicago-lakefront-beaches-chicago-plan.

[58] *See* Henderson, *supra* note 56.

owned by Loyola, but would be used for athletic facilities and playing fields and would be open to the public.[59]

Loyola did everything one would expect by way of securing approval for the project. The state legislature adopted a statute acknowledging that this was public trust land, but finding that the public interest would be advanced by the plan, including the interests of the residents of Rogers Park, who would gain new recreational opportunities.[60] The Chicago City Council blessed the plan.[61] The U.S. Army Corps of Engineers reviewed the plan under the Clean Water Act and the Rivers and Harbors Act, and found no impairment of public rights of navigation or fishing.[62] The Corps also did an analysis of the plan under the National Environmental Policy Act, and found no significant effect on the environment.[63]

An environmental group called the Lake Michigan Federation nevertheless challenged the plan in federal district court as violating the public trust doctrine. The matter was assigned to Judge Marvin Aspen, who held that the project was a "transparent giveaway of public property to a private entity," and hence violated the public trust doctrine.[64]

Reviewing the various Illinois precedents, Judge Aspen discerned that the public trust doctrine strongly disfavors any attempt by the State to "surrender valuable public resources to a private entity,"[65] "benefit a private interest,"[66] or relinquish the State's "power over a public resource."[67] The fact that the project would entail benefits to the community, and indeed would improve access to the Lake, was irrelevant.[68] The fact that the outer perimeter would remain public land and that Loyola pledged to allow public access to the inner area was irrelevant.[69] The fact that Loyola was a nonprofit educational institution was irrelevant.[70] The fact that all levels of government – federal, state, and local – had approved the project was irrelevant.[71] Indeed, the Judge read the Illinois cases as allowing no

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[59] Lake Mich. Fed'n v. U.S. Army Corps of Engineers, 742 F. Supp. 441, 443 (N.D. Ill. 1990); *see also*, John McCarron, *Loyola Unveils Campus Lakefill Proposal*, CHICAGO TRIBUNE (Oct. 1, 1987).

[60] *Lake Mich. Fed'n*, 742 F. Supp. at 443.

[61] *Id.*

[62] *Id.*

[63] *Id.*

[64] *Id.* at 441.

[65] *Id.* at 445 (citing *Scott*, 360 N.E. at 780).

[66] *Id.* at 444 (citing *Scott*, 360 N.E. at 780).

[67] *Id.* at 445 (citing *Illinois Cent.*, 146 U.S. at 453).

[68] *Id.* at 446.

[69] *Id.* at 445.

[70] *Id.* at 443.

[71] *Id.*

deference to any public-to-private transfer of public trust property.[72] Any such effort should be automatically enjoined.

Citing the cost of litigation, Loyola declined to appeal.[73] In the future it would devote its efforts to rearranging the limited space it had available, rather than seeking expansion in the Lake.[74]

The most recent word on the public trust doctrine from the Illinois Supreme Court came in 2003.[75] This involved a legal challenge, brought by the Friends of the Parks and aligned groups and individuals, seeking to derail the proposed reconstruction of Soldier Field by adding a new stadium resembling a spaceship on top of the original 1924 colonnaded structure.[76] The project, following a similar public-private undertaking to re-build Comiskey Park for the White Sox, was designed to enhance the revenues of the Chicago Bears, the principal tenant of Solider Field.[77] The project had the blessing of both the State Legislature and the Park District.[78]

The court in the *Soldier Field* Case gave the public trust contention a rather cursory treatment. The court sharply distinguished the Solider Field makeover from the landfilling disapproved in *Illinois Central* and *Scott*.[79] Both cases involved a transfer of public trust property "to a private party."[80] In the present case, the Park District would remain "the owner" of Soldier Field.[81] Notwithstanding the thirty year lease to the Bears, renewable at the team's option for an additional 20 years, there was "no conveyance" to the Bears, and the Park District retained "control" over the property as landlord.[82] The court concluded that the public would benefit in several ways from the project, including having a better stadium for a variety of events in addition to professional football games, and better parking for access to museums and the lakefront.[83] The court said nothing specifically

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[72] *Id.* at 447.

[73] *Id.* at 449.

[74] Stevenson Swanson, *Loyola Ends Controversial Lake Fill Plan*, CHI. TRIBUNE, Jul. 12, 1990, http://articles.chicagotribune.com/1990-07-12/news/9002260870_1_big-construction-projects-president-of-loyola-university-appeal.

[75] Friends of the Parks v. Chi. Park Dist., 786 N.E.2d 161 (Ill. 2003) [hereinafter *Soldier Field*].

[76] Steve Chapman, *A stadium deal that is hard to bear*, CHI. TRIBUNE, Sep. 14, 2003, http://www.chicagotribune.com/sports/football/bears/csac-bt-030914soldierfield chapmancommentary-story.html ("It has been said that the result looks like a spaceship has landed on the stadium.").

[77] *Soldier Field*, 786 N.E.2d at 164.

[78] *See id.* at 161.

[79] *Id.* at 170.

[80] *See generally*, *Scott*, 360 N.E. 2d 773; *Illinois Cent.*, 146 U.S. 387.

[81] *Soldier Field*, 786 N.E.2d at 170.

[82] *Id.* at 170, 173.

[83] *Id.* at 170.

about the standard of review to be applied in public trust cases, although it clearly applied a far more deferential standard than had been applied in the cases involving the South Works plant expansion or the Loyola campus expansion.[84]

It is possible to read the *Soldier Field Case* as holding that long term leases to private entities do not violate the public trust doctrine, as long as the fee remains with a public institution. This would render the doctrine largely meaningless, or at least would permit ready evasion. I think it rather more significant that the court did not adopt the reasoning of certain public use cases in the law of eminent domain, like *Kelo v. City of New London*,[85] invoking pecuniary externalities like higher taxes and more jobs in rejecting the public trust challenge. Use by the public and retention of public control seemed to be critical in the court's mind, not economic development-type benefits.

What can be said by way of summary about the 125-year odyssey of the public trust doctrine in Illinois? A couple things seem clear.

One, the purpose of the doctrine has changed dramatically. Originally it was to preserve public access to navigable waters, in order to allow the public to engage in commerce or fishing.[86] The focus changed with the environmental revolution in the 1970s.[87] Today the purpose is understood to be preservation of public resources in the hands of public institutions.[88] The doctrine has become an anti-privatization doctrine for public property.[89] Two, the public trust doctrine is applied by Illinois courts in a moderately aggressive fashion that is more intrusive than the standard of review used in reviewing public use challenges to the expenditure of public funds more generally.

Two other things seem to be empirically true although they have never been expressly acknowledged in the Illinois judicial decisions. First, the doctrine seems to have bite only with respect to land that is either below navigable waters or that has been reclaimed from navigable waters. This makes sense, given that the public trust in Illinois is said to be based on a condition placed on the state's title to certain resources, namely the federal government's grant to the state of the lands underlying Lake Michigan.[90] Second, there seems to be an unstated statute of limitations on assertions of public trust claims. A very large amount of land along the lakefront in

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[84] *See generally, Lake Mich. Fed'n*, 742 F. Supp. 441; *Scott*, 66 Ill. 2d 65.

[85] 545 U.S. 469 (2005).

[86] *Illinois Cent.*, 146 U.S. at 452.

[87] *See Scott*, 66 Ill. 2d 65; *Paepcke*, 263 N.E.2d 11.

[88] *See Lake Mich. Fed'n*, 742 F. Supp. at 443.

[89] *See id.*

[90] *See id.*

Chicago sits on landfill in areas that were originally covered by the Lake.[91] Much of this is privately owned, and is devoted to very expensive commercial development.[92] If someone proposed today to engage in more landfilling to build a high-rise condominium, environmentalists and preservationists would run to court and very likely would get an injunction to block such a project under the public trust doctrine. But no one seems to think that the condominiums that currently rest on landfill – much of which was never authorized by the state – are similarly vulnerable to challenge. Yet the legal understanding that would subject a public trust challenge to a statute of limitations-type defense has never been articulated.[93]

Most recently, a lawsuit based on the public trust doctrine was filed challenging a proposal to locate the Lucas Museum of the Narrative Arts on the lakefront in Burnham Park.[94] This area was once submerged land but has been solid fill for many decades. There was also a brief controversy about the plan to construct the Obama Presidential Library in either Jackson Park or Washington Park.[95] These are public parks but were never submerged under the Lake. Conceivably, a definitive resolution of these challenges could have offered further clarification about the type of resources subject to the doctrine and whether there is some kind of statute of limitations on bringing a public trust challenge. But the Lucas Museum project was dropped after an initial defeat in federal district court, and the challenge to the Obama Library appears to have been dropped. So the ambiguities surrounding the Illinois version of the doctrine remain unresolved.

II. NEW YORK

In terms of public access to navigable waters and public rights in lands associated with navigable waters, New York follows a body of principles derived from English law.[96] If a waterway is subject to the ebb and flow of

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[91] *See* Joseph D. Kearney & Thomas W. Merrill, *Contested Shore: Property Rights in Reclaimed Land and the Battle for Streeterville*, 107 NW. U. L. REV. 1057 (2013).

[92] *Id.* at 1120.

[93] A possible model might be Hickey v. Illinois Cent. R.R. Co., 35 Ill. 2d 427, 220 N.E.2d 415 (Ill. 1966), where the Illinois Supreme Court held that the State was "estopped" from challenging a conveyance of air rights above filled land because it had stood by and done nothing to interfere with the development of those rights over a long period of years.

[94] Friends of the Parks v. Chicago Park Dist., 2016 WL 427565 (N.D. Il. 2016) (declining to dismiss public trust suit challenging construction of the museum).

[95] Don Babwin and Caryn Rousseau, *Obama Presidential Library Will Be Built On Chicago's South Side*, HUFFINGTON POST, May 12, 2015, http://www.huffingtonpost.com/2015/05/12/obama-presidential-library_n_7263666.html.

[96] *See* Robin Kundis Craig, *A Comparative Guide to the Eastern Public Trust Doctrines:*

the tide, then the submerged land is presumptively owned by the state.[97] If a waterway is not subject to the ebb and flow of the tide, then the submerged land is owned by the abutting riparian owners to the centerline of the body of the water.[98] However, all waterways that are navigable in fact, without regard to whether they are subject to the ebb and flow of the tides, are impressed with an implied public easement allowing the public to use the waterway for navigation.[99]

It is not entirely clear how New York came to embrace what I have called the clear statement theory of the public trust. New York's version of the public trust doctrine has been described as being grounded in the common law.[100] This is true, although the New York courts also pay significant attention to general statutes that govern the disposition of governmental resources. What is clear is that the New York courts have no authority to override a decision by the state legislature expressly authorizing the disposal of public trust lands.[101] In that sense, the doctrine in New York has both a common law and a statutory foundation.

How did New York come to embrace what I have called the clear statement theory of the public trust? There is no evidence that the *Illinois Central* case, with its theory of embedded title, played any role in the development of the New York understanding.[102] The first New York case to mention a public trust was decided twenty years before *Illinois Central*. That case, *Brooklyn Park Commissioners v. Armstrong*, involved a plan by the City of Brooklyn to sell off part of Prospect Park for private development.[103] The court upheld the plan because it had been expressly authorized by the state legislature.[104] Thus, New York law started with a

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Classification of States, Property Rights, and State Summaries, 16 PENN. ST. ENVTL. L. REV. 1, 85-86 (2007).

[97] *Id.*

[98] Fulton Light, Heat & Power Co. v. State, 200 N.Y. 400, 94 N.E. 199 (1911).

[99] *See* Douglaston Manor, Inc. v. Bahrakis, 678 N.E.2d 201, 204 (N.Y. 1997) (reaffirming public right of navigation on non tidal but navigable rivers, but allowing grants of exclusive rights of fishery on such rivers).

[100] *See, e.g.*, Susan J. Kraham & Lisa K. Perfetto, *Scratching the Surface: Does New York's Public Trust Law Prevent Subsurface Access to Natural Gas Below Parkland in the Marcellus Shale?*, 19 BUFF. ENVTL. L.J. 43, 47 n.10 (2011-12). *See* Friends of Van Courtlandt Park v. City of New York, 750 N.E. 2d 1050, 1054 (N.Y. 2001) (invaliding proposed use of park "as a matter of common law").

[101] *See* The Brooklyn Park Comm'rs v. Armstrong, 45 N.Y. 234; Bardes v. Herman, 62 Misc. 428, 431 (N.Y. Sup. Ct. 1909).

[102] It appears that *Illinois Central* has never been cited by the New York courts.

[103] *Armstrong*, 45 N.Y. at 237.

[104] *Id.* at 244.

park and endorsed the idea of legislative supremacy.[105] This set the doctrine down a very different path than the one followed by Illinois.

Looking at the other older cases, my sense is that they were based on an application of Dillon's Rule of municipal government, or something closely analogous. Dillon's Rule, named after the author of a prominent treatise on local government law published shortly after the Civil War, basically provides that local governments can exercise only those powers expressly delegated to them by the state legislature.[106] As one of my colleagues, Richard Briffault, has written, the rule

> reflects the view of local governments as agents of the state by requiring that all local powers be traced back to a specific delegation: whenever it is uncertain whether a locality possesses a particular power, a court should assume that the locality lacks that power.[107]

Because most of the public trust cases have involved decisions by local governments to transfer parks or other government lands to private persons, courts intuitively reached for Dillon's Rule, or something very much like it, in reviewing challenges to these conveyances. Hence the understanding emerged that public trust resources can be transferred to private parties only if the state legislature has expressly authorized the transfer.

The clear statement theory does not solve questions about the scope of the resources covered by the doctrine. Submerged land owned by the state and public parks and wilderness areas are clearly covered. A recent decision seems to say that any government-owned land adjacent to a waterway is covered.[108] Other recent decisions, by intermediate appeals courts or trial courts, hold that a city-owned parking lot is covered but a building designated as a landmark is not.[109] Obviously there is room here for judicial development. One wonders, for example, whether former Mayor Michael Bloomberg's proposal to charge drivers for the privilege of using New York City streets would have been vulnerable to challenge under the public trust doctrine.[110]

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[105] *Id.*

[106] JOHN FORREST DILLON, COMMENTARIES ON THE LAW OF MUNICIPAL CORPORATIONS 115-19 (3d ed. 1881) (1st ed. 1872).

[107] Richard Briffault, *Our Localism: Part I-the Structure of Local Government Law*, 90 COLUM. L. REV. 1, 8 (1990).

[108] *See* Gladsky v. City of Glen Cove, 164 A.D.2d 567, 570 (N.Y. App. Div. 2d Dept. 1991).

[109] 10 E. Realty, LLC v. Inc. Village of Valley Stream, 17 A.D.3d 474, 476 (N.Y. App. Div. 2d Dept. 2005); Landmark West! v. City of New York, 9 Misc.3d 563, 572 (N.Y. Sup. Ct. 2005).

[110] *See* Nicholas Confessore, *Congestion Pricing Plan Dies in Albany*, N.Y. TIMES, Apr. 7, 2008.

Nor does the clear statement theory provide ready answers about what kinds of uses of public resources are incompatible with the public trust. A couple of relatively recent decisions illustrate the type of questions that come up. In one, *Friends of Van Courtlandt Park v. City of New York*, the question was whether construction of an underground water treatment plant in a large park in the Bronx was barred by the public trust doctrine.[111] The New York Court of Appeals held that it was, given that construction of the treatment plant would disrupt public access to the park for five years.[112] The project thus required the express consent of the legislature.[113]

In another decision by an intermediate appeals court, *SFX Entertainment, Inc. v. City of New York*, the question was whether a 35-year license to a private firm to construct and operate a concert amphitheater on Randalls and Wards Islands in New York City was consistent with the area's status as a park.[114] The Appellate Division held that the proposed amphitheater was a permissible park use, in part because it was authorized by a license terminable at will rather than a lease.[115] This is reminiscent of the Illinois Supreme Court's ruling that a 30-year lease of Soldier Field to the Chicago Bears did not violate the public trust doctrine.[116]

Judicial interpretation thus plays a large role in the implementation of the public trust doctrine under the clear statement theory. The distinctive feature of the theory is that it operates like a remand to the legislature for a close look at certain dispositions of public resources. Courts do not have the last word about whether a transfer of ownership or other dispositions of public trust resources will be permitted.[117] The legislature has the last word.[118] But courts can raise a red flag if they conclude the resources are sufficiently important to qualify as public trust resources, and if they think the proposed disposition is problematic. In this sense, the clear statement version of the public trust doctrine operates like clear statement rules in constitutional law, establishing a collaborative regime that permits change only if both the judiciary and the legislature specifically deliberate about the matter and agree that change is warranted.[119] The collaborative nature

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[111] 750 N.E.2d 1050 (N.Y. 2001).

[112] *Id.*

[113] *Id.*

[114] 747 N.Y.S.2d 91, 92 (N.Y. App. 2002).

[115] *Id.*

[116] *Soldier Field*, 786 N.E.2d at 170.

[117] Friends of Van Cortlandt Park v. City of New York, 750 N.E.2d 1050, 1054-55 (2001).

[118] *See id.*

[119] *See* Thomas W. Merrill, *Rescuing Federalism After* Raich: *The Case for Clear Statement Rules*, 9 LEWIS & CLARK L. REV. 823, 827-35 (2005) (discussing the advantages of clear statement rules in the context of federal-state relations).

of the New York doctrine gives it greater flexibility than the title theory followed by Illinois, and by giving the legislature the final word, lends it greater democratic legitimacy. These features may also help explain why it applies to a wider range of resources.

III. HAWAI'I

The early history of the public trust doctrine in Hawai'i bears some similarity to Illinois. The first mention of the doctrine occurred in 1899, in a controversy over Honolulu harbor that was the mirror image of the controversy over the lakefront in Chicago.[120] A chartered railroad company wanted to acquire a portion of the submerged land to construct a terminal for unloading coal from ships.[121] The Republic of Hawai'i, through its Interior Department, gave the railroad a revocable lease for this purpose.[122] When the government sought to revoke the lease, the railroad threatened to use its delegated power of eminent domain to seize the land. The Supreme Court of Hawai'i, in a case called *King v. Oahu Railway & Land Co.*, held the railroad had no power to do so, because the submerged land was "held in trust for the public uses of navigation."[123] In support of this conclusion, the court quoted at length from Justice Field's opinion in *Illinois Central*, involving the Chicago harbor.[124] In a sense then, the public trust doctrine in Hawai'i also starts with *Illinois Central*, and indeed that decision continues to be relied upon by the Hawai'i Supreme Court to this day.[125]

Hawai'i is also similar to Illinois, and for that matter New York, in that the public trust doctrine led a very quiet existence until the environmental revolution occurred in the 1970s. Even then, it was mentioned in only a few Hawaiian cases involving boundary disputes between private uplands and public beaches, but not for much else.[126]

The public trust doctrine burst forth in Hawai'i, in a big time way, as part of a series of highly controversial decisions by the state supreme court

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[120] *See* King v. Oahu Ry. & Land Co., 11 Haw. 717, 723 (1899).

[121] *Id.* at 718.

[122] *Id.*

[123] *Id.* at 725.

[124] *Id.* at 723-25.

[125] *See, e.g.*, *In re* 'Īao Ground Water Mgmt. Area High-Level Source Water Use Permit Applications, 128 Haw. 228, 277, 287 P.3d 129, 178 (2012); Kelly v. 1250 Oceanside Partners, 111 Haw. 205, 221, 140 P.3d 985, 1001 (2006).

[126] See, e.g., State by Kobayashi v. Zimring, 566 P. 2d 725, 735 (Haw. 1977) (awarding State title to land formed by volcanic eruption that overflowed shoreline); County of Hawai'i v. Sotomura, 517 P. 2d 57, 63 (1973) (holding that State owns land seaward of high tide line).

involving water rights.[127] The rights in question did not involve the public right of access to navigable waters for commerce and fishing – the classic issue in *Illinois Central* and *Oahu Railway*.[128] Instead, these decisions have involved the rights to consumptive uses of water for purposes like irrigation or public drinking water systems – what the Hawai'i courts call "water resources" law.[129] The public trust doctrine has never been applied to water resources in this sense in Illinois or New York. Indeed, the only other state besides Hawai'i that has extended the doctrine in this fashion is California. And even there, the famous *Mono Lake* decision[130] involved the diversion of waters by the city of Los Angeles from tributaries of a navigable lake, so the diversion had an impact on navigation.[131] In Hawai'i, the connection to navigation has been cut altogether.[132]

How did this happen? The precipitating event was the Hawai'i Supreme Court's decision in a case called *McBryde Sugar Company, Ltd. v. Robinson*.[133] This was a dispute over the apportionment of waters in the Hanapepe River in Kauai.[134] The private parties, the state, and the trial court all appear to have assumed that a unique doctrine of appurtenant rights, whereby an upland riparian owner is entitled to all "surplus water" not required by established uses of lower riparian owners, was part of the established law in Hawai'i.[135] On appeal, the Hawai'i Supreme Court rather dramatically revised the law and held that Hawai'i follows the natural flow theory of riparian rights.[136] Appurtenant owners could use the water but had no property rights in surplus water, and could not transfer the water or divert it from the watershed.[137] The court seemed to say that all surface water in Hawai'i is a public resource.[138]

On petition for rehearing in *McBryde*, the private owners argued, among other things, that the court's decision was such a dramatic change in the law

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[127] For background, *see* David L. Callies, *It All Began in Hawai'i*, 45 JOHN MARSHALL L. REV. 317 (2012).

[128] *See Waiahole Ditch*, 94 Haw. at 133, 9 P.3d at 445.

[129] *See id.*

[130] Nat'l Audubon Soc'y v. Super. Ct. of Alpine City., 658 P.2d 709 (Cal. 1983).

[131] *Id.* at 711.

[132] *See* McBryde Sugar Co. v. Robinson, 54 Haw. 174, 186-87, 504 P.2d 1330, 1338-39 (1973) (holding the right to water is owned by the state and reserved for the people of Hawai'i for their common good in all land grants).

[133] *Id.*

[134] *Id.* at 176, 504 P.2d at 1333.

[135] *See* Territory of Hawai'i v. Gay, 31 Haw. 376 (1930). Groundwater was allocated to surface owners under a principle of correlative rights. *See* City Mill Co., Ltd. v. Honolulu Sewer and Water Comm., 30 Haw. 912 (1929).

[136] *McBryde*, 52 Haw. at 197-98, 504 P.2d at 1344.

[137] *Id.* at 200, 504 P.2d at 1345.

[138] *See id.* at 186-86, 504 P.2d at 1339.

that it constituted a taking of their property rights.[139] This caused one of the Justices in the majority, Justice Levinson, to change his vote.[140] But the other Justices stuck to their guns.[141] Later, the private parties joined forces and obtained a judgment from the federal district court in Hawai'i that the Hawai'i Supreme Court had committed a judicial taking of their property.[142] On appeal, the Ninth Circuit certified a number of issues pertinent to the judicial taking question to the Hawaiian Supreme Court.[143] In response, the Hawai'i Supreme Court issued a further decision, called *Robinson v. Ariyoshi*, in 1982.[144] It was here that the public trust doctrine made its most dramatic appearance in Hawaiian law.[145] The father of this expanded public trust doctrine in Hawai'i was Chief Justice William S. Richardson, author of the decision in *Robinson v. Ariyoshi*.[146]

It is notable that the public trust doctrine took new form in Hawai'i in response to a claim of a judicial taking.[147] One of the controversial features of the public trust doctrine, which was very much evident in *Illinois Central*, is that it defeats claims of unconstitutional violations of vested rights.[148] The public trust doctrine is a kind of get-out-of-jail-free card for claims that the government has committed a taking. If the resource is subject to the public trust, then it cannot be transferred into private hands, therefore a taking of private rights in such resources is not a taking because private ownership was not permitted in the first place, or so the logic runs.[149] Given that the Hawai'i Supreme Court was being accused of committing a judicial taking,[150] it is not surprising that it reached for the public trust doctrine, in a defensive move, to rebut the takings charge.

In any event, the *Robinson* court invoked a version of the public trust doctrine similar to the one that the Illinois courts developed after *Paepcke* in 1970. *Illinois Central* was quoted at length,[151] Professor Sax's influential

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[139] *Id.* at 262-63, 517 P.2d at 27.

[140] *Id.* at 262, 517 P.2d at 27.

[141] *See id.* at 261-63, 517 P.2d at 27-28.

[142] Robinson v. Ariyoshi, 441 F. Supp. 559, 585-86 (D. Haw. 1977).

[143] Robinson v. Ariyoshi, 753 F.2d 1468, 1471 (9th Cir. 1985).

[144] 65 Haw. 641, 658 P.2d 287 (1982).

[145] *See id.* at 674-77, 658 P.2d at 310-12.

[146] *Id.* at 643, 658 P.2d at 291.

[147] *See* Williamson B.C. Chang, *Judicial Takings:* Robinson v. Ariyoshi *Revisited*, 21 WIDENER L.J. 655 (2012).

[148] *See Illinois Cent.*, 146 U.S. at 458-59.

[149] See John D. Echeverria, *The Public Trust Doctrine as a Background Principle Defense in Takings Litigation*, 45 U.C. DAVIS L. REV. 931 (2012).

[150] *See Robinson*, 65 Haw. at 666-67, 658 P.2d at 305.

[151] *Id.* at 674-75, 658 P.2d at 310.

article was cited multiple times,[152] the title theory was implicitly adopted. The title theory was based on language in the statute implementing the Māhele of 1848 that reserved in the people of Hawai'i "the right to drinking water, and running water and the right of way. . . ."[153] The court also followed Illinois in construing the public trust as a dynamic doctrine that changes as the needs and interests of society change.[154] It may have been appropriate at one time, the court said, to allow landowners "to drain rivers dry for whatever purposes they saw fit."[155] But this was no longer the case. "The reassertion of dormant public interests [this is the court's language] in the diversion and application of Hawaii's waters has become essential with the increasing scarcity of the resource and recognition of the public's interests in the utilization and flow of those waters."[156] In a footnote, the court also observed that the Hawaiian constitution adopted in 1978 provided that "[a]ll public resources are held in trust by the State for the benefit of the people."[157]

When the case returned to the federal courts, a new argument was introduced by the U.S. Supreme Court – that the judicial takings claim was premature, because no final disposition of water rights had yet occurred.[158] On this basis, after further back-and-forth between the district court and the Ninth Circuit, *McBryde*'s adoption of the natural flow theory of water resources was allowed to stand.[159]

The natural flow theory adopted in *McBryde* was borrowed from English common law as it existed before the industrial revolution and was said to be congruent with Hawaiian customary law.[160] But natural flow has long been abandoned as unworkable in every state in the continental United States.[161] Taken literally, it would prohibit any consumable use of water that does not generate an equivalent return flow to the stream. So it was not too surprising that the Hawai'i Supreme Court, in a case called *Reppun v. Board of Water Supply*,[162] decided in 1982 that what the public trust

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[152] *Id.* at 674 n.31, 675 n.32, 675, 658 P.2d at 310 n.31, 310 n.32, 311.

[153] HAW. REV. STAT. § 7-1 (1955).

[154] *See Robinson*, 65 Haw. at 674-75, 658 P.2d at 310 (stating "we comprehend the nature of the State's ownership as a retention of such authority to assure the continued existence and beneficial application of the resource for the common good.").

[155] *Id.* at 676, 658 P.2d at 311.

[156] *Id.*

[157] *Id.* at 676 n.34, 658 P.2d at 311 n.34 (citing HAW. CONST. art. XI, § 1).

[158] Ariyoshi v. Robinson, 477 U.S. 902 (1986).

[159] *Robinson*, 887 F.2d 215 (9th Cir. 1989).

[160] *See* McBryde Sugar Co. v. Robinson, 55 Haw. 260, 288, 517 P.2d 26, 42 (1973).

[161] *See* 1 Waters and Water rights § 7.02(c) at 7-37—7-48 (Robert E. Beck & Amy K. Kelly eds. 1991) (2007 repl. vol.).

[162] 65 Haw. 531, 656 P.2d 57 (1982).

doctrine really required is a form of reasonable use riparianism.[163] This version of water law, which is followed in the eastern states in the continental U.S., permits reasonable consumptive uses of water as long as they do not interfere with the reasonable uses by other riparians.[164] In other words, rights to use water are fixed by a balancing of interests. Given the great complexity of this process, and the difficulties of measuring withdrawals and monitoring compliance with limits, most states use administrative agencies called variously Water Boards or Water Commissions to make these determinations, subject to judicial review.[165]

Hawai'i moved in a similar direction, adopting a state water code in 1987 and establishing a Water Commission to resolve disputes over the apportionment of water resources.[166] But the public trust doctrine did not fade away. Instead, it received a robust re-affirmation in the famous *Waiahole Ditch* case decided by the Hawai'i Supreme Court in 2000.[167] The case involved the very contentious issue of transfers of water from the windward side of O'ahu, which gets lots of rainfall, to the leeward side, which is much more arid.[168] The ditch in question had been built by the O'ahu Sugar Company in 1913 to irrigate its sugar cane plantation.[169] When the company ceased growing sugar in 1995, a variety of interests filed claims with the Water Commission seeking to secure some portion of the water.[170] The Hawai'i Supreme Court's decision was on judicial review of the decision and order of the Commission.[171]

The *Waiahole Ditch* court's decision includes perhaps the longest discussion of the public trust doctrine found in any American appellate opinion. For present purposes, one of the most significant aspects of the decision is that the provisions of the Hawaiian Constitution of 1978 were elevated to the primary foundation of the public trust doctrine.[172] The title theory advanced in *Robinson* (and followed in Illinois) was mentioned, but was demoted to secondary status.[173] Thus, Hawai'i adopted what I have

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[163] *See id.* at 553, 656 P.2d at 71-72.

[164] *Id.*

[165] *See, e.g.*, John E. Thorson et al., *Dividing Western Waters: A Century of Adjudicating Rivers and Streams, Part II*, 9 U. DENV. WATER L. REV. 299, 321-22 (providing an overview of reorganization of state water management in the 1970s).

[166] Haw. Revised Statutes, Chapter 174C.

[167] *See generally, Waiahole Ditch*, 94 Haw. 97, P.3d 409 (referring to the public trust doctrine throughout the opinion).

[168] *Id.* at 111, 9 P.3d at 423.

[169] *Id.*

[170] *See id.* at 111-12, 9 P.3d at 423-24.

[171] *See id.* at 118, 9 P.3d 430.

[172] *Id.* at 131-32, 9 P.3d 443-44.

[173] *Id.* at 129, 9 P.3d at 441.

called the constitutional theory of the public trust doctrine and has adhered to that characterization in subsequent decisions.[174]

Building on the preservationist orientation of the public trust doctrine post-1970, *Waiahole Ditch* also announced that the public trust doctrine, as applied to Hawaiian water resources, establishes certain substantive preferences.[175] In-stream uses of water were given pride of place, a muted version of the court's endorsement of the natural flow theory of water resources in *McBryde*.[176] Historical uses by Native Hawaiians were also given preferential status.[177] In contrast, the court insisted that commercial uses of water, including presumably irrigation for plantation agriculture and for watering golf courses, were demoted.[178] The court said these could never be regarded as vested rights, although they could enter into the balancing process used by the Commission in making water apportionment decisions.[179]

One particularly instructive feature of the decision is that the court used the public trust doctrine as a basis for adjusting the standard of review the court would employ in reviewing decisions by the Water Commission. The court acknowledged that "the commission inevitably must weigh competing public and private water uses on a case-by-case basis."[180] But it described the role of the court in reviewing such decisions as taking a "close look" at the balance the Commission has struck, in order to assure that the agency has given proper weight to public trust values.[181] To my ear, this sounds similar to the "hard look" that federal courts have said is required in reviewing important decisions by environmental and consumer safety regulatory decisions.[182]

Waiahole Ditch seems to have fostered a steady stream of litigation in Hawai'i over water resources issues. Consider, as but one example, the recent decision of the Hawai'i Supreme Court involving a small firm by the

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[174] *See, e.g.*, Kaua'i Springs, Inc. v. Planning Comm'n of Kaua'i, 133 Haw. 141, 172, 324 P.3d 951, 982 (2014).

[175] *See Waiahole Ditch*, 94. Haw. at 147-48, 324 P.3d at 459-60.

[176] *See* HAW. REV. STAT. § 174C-71 (1991) (providing that the Commission on Water Resource Management shall establish a statewide instream use protection program).

[177] *Waiahole Ditch*, 94 Haw. at 137, 9 P.3d at 449.

[178] *Id.* at 138, 9 P.3d at 450.

[179] *Id.*

[180] *Id.* at 142, 9 P.3d at 454.

[181] *Id.* at 144, 9 P.3d at 456.

[182] *See* Greater Boston Television Corp. v. FCC, 444 F.2d 841, 851 (D.C. Cir. 1970). "Hard look review" is the conventional shorthand in administrative law for the requirement that agencies offer a reasoned explanation justifying their actions. *E.g.*, Motor Vehicle Mfrs. Ass'n v. State Farm Mutual Auto. Ins. Co., 463 U.S. 29 (1983).

name of the Kaua'i Springs Water Bottling Company.[183] The company was engaged in purchasing water from an underground spring and selling it as bottled water.[184] It wanted to expand its operations. There was considerable confusion about how many permits it needed from which agencies, including the Kaua'i Planning Commission, the Water Commission, and maybe even the Public Utility Commission. The Hawai'i Supreme Court ultimately held that under the public trust doctrine the burden was on the company to show that its request was consistent with the public trust obligations of each of these agencies, whether or not the agency had asserted jurisdiction over the matter or had expressed an interest in the matter.[185]

To an outsider, the aggressive application of the public trust doctrine to Hawaiian water resources law appears to have introduced a significant degree of legal instability. In a fairly short span of time, the state supreme court cycled through three different water regimes: appurtenant rights to surplus water,[186] natural flow,[187] and reasonable use riparianism.[188] It may be that the court finally got it right, but the upheavals have probably made it difficult to engage in long-range projects that require the use of water. In keeping with my theme, the constitutionalizing of the public trust doctrine, and the insistence on strict judicial scrutiny of balancing decisions by the water commission, are also questionable. Water is a unique resource. It is both renewable and finite, it fluctuates in volume over time, and it shares attributes of both public goods and private rights.[189] Experience on the mainland of the U.S. and around the world suggests that courts are not well suited in making the complex decisions about allocating this resource. Some kind of administrative process, operating under guidelines established by the legislature, and open to appeals from all affected interests, appears to work better. Hawai'i has moved a significant way in this direction, but its supreme court keeps insisting on having the last word, because of something called the public trust doctrine.

I do not know to what extent the judicial transformation of water resources in Hawai'i reflects a decline in the importance of commercial agriculture to the state economy relative to other industries like tourism. USDA statistics show a precipitous decline in sugar cane production in

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[183] *Kaua'i Springs*, 133 Haw. 141, 324 P.3d 951.

[184] *Id.* at 146, 324 P.3d at 956.

[185] *Id.* at 173, 324 P.3d at 983.

[186] *See supra* notes 151-57.

[187] *McBryde*, 54 Haw. at 198, 504 P.2d at 1344.

[188] Reppun v. Bd. of Water Supply, 65 Haw. 531, 563, 656 P.2d 57, 78 (1982).

[189] *See* Henry E. Smith, *Governing Water: The Semicommons of Fluid Property Rights*, 50 ARIZ. L. REV. 445, 466-74 (2008).

Hawai'i from 9.5 million tons in 1980 to 2.4 million tons in 2000.[190] It is conceivable that legal uncertainty about water rights caused or at least contributed to the decline. I suspect it is more likely that the decline was driven by other factors, similar to those that have led to a "de-industrialization" of large parts of the U.S., namely, the overall costs of production, including labor costs, are lower elsewhere.[191] Thus, the chain of causation may have been the reverse, in that courts have perceived the diminishing importance of water for agricultural irrigation and therefore that a fundamental reallocation of water rights was now possible. The puzzle, for me at least, is why the court thought that it was the proper institution to undertake such a transformation, or why, once the transformation was complete, it has insisted on remaining so actively engaged in the process.

IV. CONCLUSION

Are there any conclusions to be drawn from this brief exercise in comparative law?

One obvious takeaway is that the public trust idea is extremely plastic. It applies to very different resources in different states: land reclaimed from navigable waters in Illinois; public parks in New York; water resources in Hawai'i. Maybe there is some hidden logic behind this diversity, based on the importance of the resources to each state. But I suspect the explanation has more to do with the accidents of history and the path dependent nature of judicial precedent. At least in Illinois, where I can speak with the most authority, the concern with preserving Lake Michigan as a navigable waterway is almost entirely atavistic. Commercial water traffic on the Lake has dwindled to a trickle, and Lake Michigan is so vast and empty that even the most aggressive landfilling would have no discernable impact on its use for recreation or as a source of water. The emphasis on reclamation is explainable only as an artifact of largely-forgotten conflicts, when the lake played a much different role in the state's economy.

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[190] *Quick Stats*, NAT'L AGRIC. STATISTICS SERV., U.S. DEP'T. OF AGRIC., http://quickstats.nass.usda.gov/ (select "SUGARCANE" under "Commodity;" "PRODUCTION" under "Category;" "SUGARCANE, SUGAR - PRODUCTION, MEASURED IN TONS" and "TARO – PRODUCTION, MEASURED IN LB" under "Data Item;" "TOTAL" under "Domain;" "STATE" under "Geographic Level;" "HAWAII" under "State;" and "1980" and "2000" under "Year").

[191] *See* ROBERT ROWTHORN & RAMANA RAMASWAMY, INT'L MONETARY FUND, ECONOMIC ISSUES 10: DEINDUSTRIALIZATION—ITS CAUSES AND IMPLICATIONS (1997), https://www.imf.org/EXTERNAL/PUBS/FT/ISSUES10/issue10.pdf.

A second point concerns a common criticism of the public trust doctrine: that it suffers from a democracy deficit.[192] The disposition of public resources should be not be determined by an unelected judiciary, the argument runs, but by institutions accountable to all the people. If the resources are for the people, then the people, speaking through their elected representatives, should have the final word. The three states surveyed suggest different responses to this objection. Illinois adopted a potentially complete response, by declaring that the elected state legislature is the trustee of public resources. This solves the democracy deficit, but only if courts are willing to give a significant measure of deference to the judgments of the legislature, which Illinois courts have not been willing to do on a consistent basis.[193] New York seeks to overcome the objection by allowing the state legislature to enact express statues overriding public trust determinations. This strikes me as a better solution, although it does not protect against a legislature determined to give away the store, as allegedly happened in the *Illinois Central* case. Hawaii's response, by locating the public trust doctrine in the state constitution, arguably exacerbates the objection based on electoral accountability. Again, judicial deference to politically accountable institutions might provide a reconciliation. Just because a provision appears in the constitution it does not follow that courts must enforce it by exercising pure independent judgment.[194]

A somewhat related concern is one of institutional competence. Courts are good at certain things, like deciding the rights of individuals against each other or against the state. They are not so good at resolving disputes about the proper use of resources in which many diverse interests are implicated. Public trust controversies, especially ones involving the allocation of a resource like water, fall in the latter category – they are

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[192] *See* William D. Araiza, *Democracy, Distrust, and the Public Trust: Process-Based Constitutional Theory, the Public Trust Doctrine, and the Search for Substantive Environmental Value*, 45 UCLA L. REV. 385 (1997); Richard J. Lazarus, *Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine*, 71 IOWA L. REV. 631 (1986). Professor James Huffman has been particular persistent in advancing this critique. For his most recent effort, see James L. Huffman, *Why Liberating the Public Trust Doctrine is Bad for the Public*, 45 ENVTL. L. 337 (2015).

[193] *Compare, e.g.*, *Scott*, 360 N.E. 2d at 780 (applying a "most critical examination" to state government approval of a plannod project on land subject to the public trust doctrinc), *with Soldier Field*, 786 N.E.2d 161 (affirming court's commitment to "defer to the legislative findings announced in the Act unless the plaintiffs make a threshold showing that the findings are evasive and that the purpose of the legislation is principally to benefit private interests.").

[194] *See* Adrian Vermeule, *Deference and Due Process*, 129 HARV. L. REV. (forthcoming 2016).

polycentric in Lon Fuller's terms.[195] It seems to me that it is virtually inevitable that some kind of administrative process will be required to sort out the many complexities and competing interests in these sorts of conflicts. Courts would be well advised to nurture the development of such a process through an appropriately restrained form of review, rather than try to bend the process to its own will.

Taking the long view, the functional significance of the revival of the public trust doctrine since 1970 may be that it has served to establish a right of judicial review of decisions to dispose of public resources. Indeed, if you read Professor Sax's transformative but rather labored article from beginning to end, you will find that this is what he was trying to achieve.[196] He did not think that public resources should be frozen in their historic uses for all time. He recognized that social life is fluid and dynamic, and public values inevitably change. What he sought was some process by which decisions to transform the character of public resources, and in particular, decisions to create private rights in hitherto public resources, could be made in a deliberated fashion, after hearing the views of all persons concerned, including those who want the resources to be left alone. He sought to reformulate the public trust doctrine to these ends. To the extent that a state has developed an administrative process designed to achieve these ends, and has opened the process of disposing of state resources to judicial review, the public trust doctrine has served its purposes. I do not suggest that it should be eliminated. There may be gross violations of the general interest, like giving a private railroad control of Honolulu harbor, which warrant its revival. But as long as a well functioning administrative process is in place, the public trust doctrine should be allowed to move to the background, allowing a more flexible and inclusive process to determine the public interest.[197]

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[195] Lon L. Fuller, *The Forms and Limits of Adjudication*, 92 HARV. L. REV. 353, 394-405 (1978).

[196] *See* Sax, *supra* note 41, at 557-65.

[197] *Accord*, David L. Callies & Calvert G. Chipchase, *Water Regulation, Land Use and the Environment*, 30 U. OF HAW. L. REV. 49, 94 (2007) ("Public trust doctrines have no place in water rights decision making where a state has a modern and comprehensive water code dealing explicitly with water allocation, planning and public use and purpose.").

Patent Quantity

Jeremy W. Bock*

ABSTRACT

Much of the academic commentary on the patent system's dysfunctions has focused on patent quality. The considerable attention paid to quality issues, while necessary, overlooks a much larger problem—one of patent *quantity*. The generation, examination, management, and monetization of an ever-increasing number of patents and applications exert distortionary effects on the patent system, such as the U.S. Patent and Trademark Office's prioritization of application processing over patent quality; the growth of patent thickets; the "anticommons" that impede innovation; and the rise of patent assertion entities.

In a departure from the literature, this Article argues that the patent quantity problem must be solved first in order to solve the problems with quality, thickets, the anticommons, and patent assertion entities. Based on a situational analysis of the behavior of the patentees' agents—who have been largely overlooked in the patent reform literature—this Article proposes that a mechanism for mitigating the patent quantity problem (and its effects) may lie in a judicially-developed de facto working requirement for patent assertions.

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* Assistant Professor of Law, University of Memphis Cecil C. Humphreys School of Law. I would like to thank Tun-Jen Chiang, Bryan Choi, Jorge Contreras, Roger Ford, Jim Gibson, John Golden, Stuart Graham, Paul Heald, Dmitry Karshtedt, Mark Lemley, Doris Long, Glynn Lunney, John Newman, Michael Risch, Joshua Sarnoff, David Schwartz, Ted Sichelman, Wayman Stodart, Greg Vetter, and Melissa Wasserman for helpful comments and discussions. I would also like to thank the participants at a faculty workshop at Memphis Law, PatCon5 at the University of Kansas School of Law, the 2015 Intellectual Property Scholars Conference at DePaul University College of Law, the 2015 Texas A&M Intellectual Property Scholars Roundtable, and the 2016 Works-in-Progress in IP Colloquium at the University of Washington School of Law. Prior to entering the legal academy, the Author worked as in-house intellectual property counsel at Atmel Corporation in San Jose, California. The analyses and conclusions in this Article are attributable only to the Author and do not in any way reflect the views of Atmel Corporation.

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INTRODUCTION

Patent quality is a fashionable topic of late.[1] At the United States Patent & Trademark Office ("PTO"), it has recently become an area of renewed focus.[2] The popular narrative on patent quality accuses the PTO of issuing too many low quality patents, some of which later end up in the hands of patent assertion entities who use them to file nuisance suits.[3] As such, considerable scholarly attention has focused on improving patent quality and examination, under the assumption that if the PTO were able to screen patent applications more rigorously, fewer lower quality patents would issue. While logical, this line of reasoning misses the larger issue that makes poor patent quality an intractable problem: patent *quantity*.

In order to improve patent quality, the quantity problem may need to be solved first. The literature suggests that the PTO's internal processes are profoundly affected by the need to manage the ever-increasing volume of

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[1] Within the past ten years (as measured between Sept. 15, 2005 and Sept. 15, 2015), there were twenty-one articles available in Westlaw with the term "patent quality" in the title, and sixty-seven articles in which the term "patent quality" occurred at least ten times.

[2] In early 2015, the PTO embarked on an initiative to enhance patent quality. U.S. PATENT & TRADEMARK OFFICE, *Enhanced Patent Quality Initiative*, http://www.uspto.gov/patent/initiatives/enhanced patent quality initiative (last visited Mar. 6, 2016).

[3] One study suggests that non-practicing entities who are repeat litigants tend to assert patents that are weak. John R. Allison, Mark A. Lemley & Joshua Walker, *Patent Quality and Settlement Among Repeat Patent Litigants*, 99 GEO. L.J. 677, 687 (2011).

applications,[4] which has seemingly introduced an operational bias at the PTO that prioritizes docket management over quality control.[5] This bias will likely get worse, as the current volume of patenting[6] appears to be accelerating.[7]

Notably, the adverse impact of the sheer volume of patent applications—and the patents that result—is not localized to the PTO's ability to police quality:[8] they also give rise to patent thickets and the "anticommons" that impede downstream innovation and increase the risk of holdup;[9] they create pressure on operating companies to earn a return on their patent portfolios through monetization activities (e.g., licensing campaigns) that put others in their industry at heightened risk of suit;[10] and they fuel the secondary markets where companies unload excess patents, and where patent assertion entities acquire the patents they assert.[11] In short, the generation, examination, management, and monetization of an ever-increasing number of patents and applications have introduced multiple distortionary effects in the patent system, of which the problem of poor patent quality is but one symptom.

While a few commentators have raised concerns about high-volume patenting,[12] a detailed study of its mechanics is largely absent from the literature—a deficiency this Article endeavors to ameliorate. An in-depth exploration of the mechanism of high-volume patenting may provide clues on how the patent quantity problem may be effectively mitigated.

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[4] *See infra* Part I.B.

[5] *See infra* Part I.B.

[6] *See* U.S. PATENT & TRADEMARK OFFICE, U.S. PATENT STATISTICS CHART CALENDAR YEARS 1963–2014, http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm (last modified Mar. 6, 2016).

[7] *See* Roger Allan Ford, *The Patent Spiral*, 164 U. PA. L. REV. 827, 856 (2016) (observing that from 1983 to 2014, the annual number of U.S. utility patents granted grew from 56,860 to 300,678, which corresponds to an increase from 2.4 to 8.8 in the number of patents granted per year per 10,000 people).

[8] *See* Christopher A. Cotropia, *The Folly of Early Filing in Patent Law*, 61 HASTINGS L.J. 65, 70-71 (2009) [hereinafter Cotropia, *Early Filing*] ("Filing early and often exacerbates many of the patent system's most recognized problems . . . including the rising number of applications, the underdevelopment of patented inventions, the creation of patent thickets, the problem of patent trolls, and the lack of notice of patent boundaries.").

[9] *See infra* notes 28-30 and accompanying text.

[10] *See generally* Colleen V. Chien, *From Arms Race to Marketplace: The Complex Patent Ecosystem and Its Implications for the Patent System*, 62 HASTINGS L.J. 297 (2010) [hereinafter Chien, *Arms Race*].

[11] *See id.*

[12] *See, e.g.*, Chien, *Arms Race*, *supra* note 10, at 338; John M. Golden, *Proliferating Patents and Patent Law's "Cost Disease,"* 51 HOUS. L. REV. 455 *passim* (2013); Ford, *supra* note 7, at 832.

To fully characterize the mechanism by which high-volume patenting occurs, this Article analyzes the impact of the patentees' agents on patenting behavior, which has been largely overlooked by scholars. Indeed, the interactions of multiple self-interested individuals who act as the patentee's agents at various stages of the patenting process—from invention to filing to prosecution to issuance—remain under-theorized. Because firms[13] receive the bulk of the patents in the United States,[14] the analysis in this Article will focus on the agents typically associated with the patent procurement process for a company: the employee-inventor, the in-house counsel,[15] and the patent attorney.[16] The focus on agents is helpful because it allows for the analysis of the motivations of individuals and their behavioral traits, including cognitive biases.

This Article's contribution to the literature is three-fold.

First, this Article adds to the scant literature that focuses on and recognizes patent *quantity*, rather than quality, as one of the major problems with the patent system. Controlling quantity is essential to fixing quality, along with other problems such as patent assertion entities, thickets, and the anticommons. Moreover, quantity, unlike quality, may actually be a solvable problem because it is easier to measure—and what can be measured can be managed.[17]

Second, this Article explores the "two-sided agency problem" in patent prosecution, which drives high-volume patenting. In analyzing the two-sided agency problem, not only are the actions of the PTO's agents (i.e., the patent examiners) evaluated, but also that of the patentees' agents (i.e., the employee-inventor, the in-house counsel, and the patent attorney) in contributing to the patenting explosion. To the extent that patent scholars have focused on agency problems, they have focused almost exclusively on

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[13] Although the focus of this Article is on patenting by firms, the analysis of agency problems will also be relevant to individual inventors who hire patent attorneys.

[14] *See* John R. Allison & Mark A. Lemley, *Who's Patenting What? An Empirical Exploration of Patent Prosecution*, 53 VAND. L. REV. 2099, 2117 (2000) (reporting results of empirical study revealing that "inventors assigned their patent rights to a corporate entity, typically but not necessarily an employer, in an overwhelming 851 out of 1,000 cases").

[15] By "in-house counsel," this Article refers to an in-house employee who is responsible for managing the patent portfolio. This is often an in house intellectual property attorney, but it can also be a non lawyer employee who is responsible for intellectual property issues.

[16] In this Article, "patent attorney" refers to an outside attorney (or patent agent) that the patentee hires for preparing and prosecuting patent applications. At some companies, there may be in-house legal staff that performs this function. For such individuals, the analysis in Part II.B of this Article for "in-house counsel" and "patent attorney" may be applicable in a blended manner, depending on the circumstances.

[17] This is an adaptation of an observation attributed to management guru Peter Drucker. *See* Jeff Shore, *These 10 Peter Drucker Quotes May Change Your World*, ENTREPRENEUR (Sept. 16, 2014), http://www.entrepreneur.com/article/237484.

the PTO and patent examiners. This Article adds to the relatively thin literature on the patentees' agents by providing the first in-depth analysis of the mechanics of high-volume patenting that explores the situational and behavioral influences that drive it.

Third, this Article concludes that the problem of over-patenting may be substantially mitigated by a solution that is seemingly orthogonal, but is suggested by the insights gleaned from analyzing the situational and behavioral influences on the day-to-day operations of the patentees' agents. Specifically, rather than attempting to overhaul the PTO's operations, this Article recommends that a judicially-crafted, de facto working requirement be imposed for patent assertions, whereby each patent claim that is asserted against an accused infringer must have been (or will be) practiced by the patentee during the period for which remedies are sought. The working requirement is expected to disincentivize high-volume patenting by shrinking the universe of assertable patent claims, which, in turn, may decrease the need for defensive patenting (as the risk of litigation has been mitigated) and may discourage the filing and maintenance of patents covering inventions that are unpracticed (as opportunities for monetization, whether by operating companies or by patent assertion entities, would be substantially limited).

This Article proceeds in several Parts.

Part I presents an overview of the problems associated with high-volume patenting. This Part also includes a summary of the literature on the PTO and examiner behavior, which furnishes insights into the impact of high-volume patenting on PTO operations. Part II introduces the "two-sided agency problem" in patent prosecution. This Part also provides a detailed description of the mechanics and the circumstances that promote high-volume patenting, along with a behavioral analysis of the patentees' agents. Part III surveys the existing proposals relating to patent quantity issues and sets forth a proposal for a judicially-developed de facto working requirement in patent litigation, which is expected to induce greater selectivity in application filings and patent portfolio maintenance. This Part also addresses potential concerns and objections with the proposed working requirement, and is followed by a brief Conclusion.

I. THE NATURE OF THE PROBLEM

A. The Literature's Focus on Patent Quality, Not Quantity

The rate of patenting has been accelerating since the establishment of the patent system in the United States.[18] This has entailed committing an ever-increasing amount of human labor and legal resources to the patent system: patent attorneys prosecute an increasing number of applications, which are examined by an expanding corps of PTO examiners, who issue an increasing number of patents, which leads to more transactions and disputes that are handled by a growing number of transactional and litigation attorneys, whose activities enhance the relative importance of patents, which fuels the demand for the services of additional patent attorneys.[19] The upshot of this growth cycle, which has continued largely unabated, is that the acceleration of patenting may strain the ability of the patent system to function effectively, leading to inefficiencies and distortions.[20]

One of the clearest indications of the patent system's inefficiencies lies in the fact that only a small fraction of issued patents, on the order of 5%, is ever asserted or licensed.[21] Indeed, most patents have little value apart from being included in a portfolio.[22] Distortions in the patent system have arisen from the production of excess patent inventory, as its participants and institutions have had difficulty properly dealing with "the crushing weight of ever-accumulating patents and patent applications."[23] For example, recent studies suggest that the PTO's backlog of applications awaiting examination[24] may contribute to an operational bias at the PTO in favor of

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[18] Golden, *supra* note 12, at 463-65.

[19] *Id.* at 476-77; *see also* Cecil D. Quillen, Jr., The U.S. Patent System: Is it Broke? And Who Can Fix It if It Is?, Remarks presented at the Spring Meeting of the Association of General Counsel 17 (May 11, 2001), http://www.agc.net/docs/s01-001.pdf ("These steady increases in the numbers of patents and patent applications, and the consequent growth in the need for more examiners and more patent attorneys, assured job security and attractive incomes for both, and also assured that neither had the slightest interest in changing the system.").

[20] Golden, *supra* note 12, at 476.

[21] *See* Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1507 (2001) [hereinafter Lemley, *Rational Ignorance*] ("[T]he total number of patents litigated or licensed for a royalty (as opposed to a cross-license) is on the order of five percent of issued patents.").

[22] Gideon Parchomovsky & R. Polk Wagner, *Patent Portfolios*, 154 U. PA. L. REV. 1, 5-7 (2005); *see also* Edmund W. Kitch, *Property Rights in Inventions, Writings, and Marks*, 13 HARV. J.L. & PUB. POL'Y 119, 122-23 (1990) ("[M]ost issued patents are worthless, or very nearly worthless. They have no market value, much less market power.").

[23] Golden, *supra* note 12, at 461.

[24] *See* UPR APPLICATION, *infra* note 42 and accompanying text.

allowance, which may adversely impact patent quality.[25] The sheer number and concentration of patents in certain sectors of the economy, especially in the high-tech[26] industry,[27] have led commentators to express concerns about patent thickets[28] and the emergence of a veritable "anticommons"[29] that may dampen cumulative innovation and impede commercialization by making product clearance searches more difficult, thereby increasing the risk of holdup.[30] Finally, building (and maintaining) a patent portfolio is often a costly endeavor that has prompted firms with large portfolios to explore monetization options,[31] such as engaging in licensing campaigns backed by the threat of litigation[32] (which has had the side-effect of promoting a patent arms race)[33] or unloading patents onto the secondary market from which patent assertion entities, popularly known as "patent trolls," source the patents they assert.[34]

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[25] *See infra* Part I.B.

[26] In this Article, the "high-tech industry" refers to the computer hardware, software, consumer electronics, and semiconductor industries.

[27] *See* Mark A. Lemley & Bhaven Sampat, *Is the Patent Office a Rubber Stamp?*, 58 EMORY L.J. 181, 195 (2008) (reporting data showing that patent applications in the "IT industries—computer hardware, software, communications, semiconductors, and electronics . . . account for more than 50% of all published patent applications"); *see also* Allison & Lemley, *supra* note 14, at 2148 tbl.1.

[28] *See generally* Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools and Standard-Setting*, INNOVATION POLICY AND THE ECONOMY, Vol. I, 119-50, 119 (Adam Jaffe, Joshua Lerner & Scott Stern eds., MIT Press 2000).

[29] *See* Mark A. Lemley, *Ignoring Patents*, 2008 MICH. ST. L. REV. 19, 19 (2008) (noting concerns "about an 'anticommons' in patent law, in which companies that want to make a product find it impossible to acquire all the rights they need from many different owners[,]" and observing that "[t]his is a particular problem for semiconductor, telecommunications, and software companies, which must aggregate hundreds or thousands of different components to make an integrated product"); *see also* Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 SCIENCE 698, 698 (1998) ("A proliferation of intellectual property rights upstream may be stifling life-saving innovations further downstream in the course of research and product development.").

[30] *See* Shapiro, *supra* note 28, at 119.

[31] In a 2009 survey of in-house intellectual property counsel at 75 companies, 49% (37 out of 75) responded that they "experienced pressure in recent years to increase corporate income directly from IP assets," and 38% (28 out of 75) indicated that "IP licensing and related income" was a corporate metric. INTELLECTUAL PROPERTY OWNERS ASSOCIATION, *2009 IPO Corporate IP Management Benchmarking Survey* 24 tbl.23 (Sept. 2009), http://www.ipo.org/wp-content/uploads/2010/09/Final2009CorporateIPManagement BenchmarkingSurveyReport.pdf [hereinafter *2009 IPO Survey*].

[32] *See* Chien, *Arms Race*, *supra* note 10, at 304-07.

[33] *See id.*

[34] *See id.*, at 340-41.

In analyzing the distortions in the patent system, much of the scholarly focus has been on the *quality* of patents issued, rather than the *quantity*. Given the sheer number of patent applications filed each year, and the persistent concerns raised about poor patent quality,[35] the organizational dynamics within the PTO have been the focus of considerable scholarly attention,[36] particularly in relation to the characteristics and the behavior of patent examiners.[37] But with certain notable exceptions,[38] much less attention has been paid to the drivers of high-volume patenting on the *patentees'* side. To better understand why a greater focus on the patentees' behavior is warranted, it may be helpful to review how the PTO has attempted to cope with the heavy volume of applications it receives.

B. The PTO's Mechanism for Coping with High-Volume Patenting

The PTO's internal processes are profoundly affected by the need to manage the volume of applications.[39] In 2014, the PTO received 615,243

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[35] *See, e.g.*, Christopher R. Leslie, *The Anticompetitive Effects of Unenforced Invalid Patents*, 91 MINN. L. REV. 101, 103 (2006) ("Mere possession of an invalid patent can help maintain an illegitimate monopoly even if the monopolist patent-holder takes no affirmative steps to enforce its patent."); John R. Thomas, *The Responsibility of the Rulemaker: Comparative Approaches to Patent Administration Reform*, 17 BERKELEY TECH. L.J. 727, 731 (2002) ("Large numbers of improvidently granted patents may create in terrorem effects on entrepreneurship, ranging from holdup licensing to patent thickets. They also create duplicative, deal-killing transaction costs, as potential contracting parties must revisit the work of the USPTO in order to assess the validity of issued patents." (footnote omitted)).

[36] *See, e.g.*, Michael D. Frakes & Melissa F. Wasserman, *Does Agency Funding Affect Decisionmaking?: An Empirical Assessment of the PTO's Granting Patterns*, 66 VAND. L. REV. 67, 70 (2013) (reporting results of empirical study suggesting that "the Agency's fee schedule biases the PTO toward granting patents"); Arti K. Rai, *Growing Pains in the Administrative State: The Patent Office's Troubled Quest for Managerial Control*, 157 U. PA. L. REV. 2051, 2081 (2009) ("Incremental reform that gives the PTO greater control over its procedures and its budgetary outlook would move us a long way toward a more efficient system of patent examination."); *see also* Ford, *supra* note 7, at 852-53 (describing organizational considerations giving rise to PTO's coordination problems in the examination process).

[37] *See, e.g.*, Mark A. Lemley & Bhaven Sampat, *Examiner Characteristics and Patent Office Outcomes*, 94 REV. ECON. & STAT. 817, 817 (2012) [hereinafter Lemley & Sampat, *Examiner Characteristics*] (reporting results of empirical study suggesting that "the most important decisions made by the patent office are significantly affected by the happenstance of which examiner gets an application").

[38] *See, e.g.*, Chien, *Arms Race*, *supra* note 10; Golden, *supra* note 12; Cotropia, *Early Filing*, *supra* note 8.

[39] *Cf.* The Federalist Soc'y for Law & Pub. Policy 2008 Nat'l Lawyers Convention, *Panel Discussion: Specialized Courts: Lessons from the Federal Circuit*, 8 CHI.-KENT J. INTELL. PROP. 317, 320 (2009) (comments of Don Martens) ("The PTO is in a real crisis. They simply cannot handle the volume of pending patent applications, and they cannot do an

patent applications,[40] issued 326,033 patents,[41] and had a backlog of approximately 600,000 unexamined applications.[42] To handle this workload, the PTO employs over 9000 patent examiners who constitute approximately 75% of its workforce.[43] In studying the factors affecting patent quality, scholars have focused primarily on the examiners. The literature suggests that examiner personnel issues, such as productivity measurements[44] and promotions,[45] may create an organizational bias toward granting patents.[46]

Specifically, examiners are given credit, known as "counts," for a first "office action" on the merits or an application "disposal."[47] An application "disposal" may occur when an unsuccessful applicant abandons the application, or when the examiner allows a patent to be granted.[48] An examiner's ability to meet productivity goals, as measured by counts, determines whether that examiner will be promoted.[49] As an examiner gains experience and rises through the ranks, the amount of time he is allotted to review applications progressively decreases, such that the most senior examiners are allotted approximately half the time of the most junior examiners to work on an application.[50] Depending on the technology, the most junior examiner may be allotted between twenty to forty-five hours,

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adequate job of examining them.").

[40] U.S. PATENT & TRADEMARK OFFICE, *supra* note 6.

[41] *Id.*

[42] U.S. PATENT & TRADEMARK OFFICE, PATENT UPR APPLICATION BACKLOG, http://www.uspto.gov/corda/dashboards/patents/kpis/kpiBacklogDrilldown.kpixml (last visited Mar. 6, 2016) [hereinafter UPR APPLICATION].

[43] In fiscal year 2014, the PTO had 12,450 employees, of which 9,302 were patent examiners. U.S. PATENT & TRADEMARK OFFICE, FISCAL YEAR 2014 PERFORMANCE AND ACCOUNTABILITY REPORT 11, http://www.uspto.gov/about/stratplan/ar/USPTOFY2014PAR.pdf.

[44] *See, e.g.*, Sean Tu, *Luck/Unluck of the Draw: An Empirical Study of Examiner Allowance Rates*, 2012 STAN. TECH. L. REV. 10 ¶¶23-34 (2012) (describing influence of "count" system on examiner behavior).

[45] *See, e.g.*, Michael Frakes & Melissa F. Wasserman, *Is the Time Allocated to Review Patent Applications Inducing Examiners to Grant Invalid Patents?: Evidence from Micro Level Application Data*, REV. ECON. & STAT. (forthcoming) (manuscript at 10-12) (Oct. 28, 2015), http://ssrn.com/abstract=2467262 [hereinafter Frakes & Wasserman, *Time Allocated*].

[46] *See, e.g.*, Lemley, *Rational Ignorance*, *supra* note 21, at 1496 n.3 ("[T]here are strong structural and psychological pressures on examiners to issue patents rather than reject applications, no matter how weak the alleged invention seems.").

[47] U.S. PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 1705, http://www.uspto.gov/web/offices/pac/mpep/documents/1700_1705.htm (last modified Nov. 4, 2015).

[48] *Id.*

[49] *See* Tu, *supra* note 44, at ¶23.

[50] *See* Frakes & Wasserman, *Time Allocated*, *supra* note 45, at 10 tbl.1.

whereas the most senior examiner may be given only ten to twenty-three hours,[51] to perform multiple substantive examination tasks, such as: reviewing the application; conducting a prior art search; preparing an office action analyzing the patentability of every claim in the application; considering the applicant's responses to the office action (which may include claim amendments); and deciding whether to allow or disallow the issuance of a patent.[52] An empirical study by Michael Frakes and Melissa Wasserman suggests that, the less time an examiner has to examine an application—despite any efficiency gains an examiner may have based on his experience—the less likely he is to conduct a rigorous analysis that may lead to a finding of unpatentability, such that he is more likely to grant a patent.[53]

Ultimately, the PTO's goal is two-fold: processing applications expeditiously while ensuring that high-quality patents are issued. While the PTO has metrics for both application processing and patent quality,[54] progress on the former appears to be the primary focus of organizational resources.[55] Notably, a recent audit by the Inspector General of the Department of Commerce was highly critical of the PTO's quality assurance practices, finding that the PTO's performance appraisals of examiners were ineffective at measuring whether high-quality patents were being issued.[56] Indeed, the PTO's prioritization of application processing speed over patent quality is reflected in how examiners are evaluated on their performance: the examiner's productivity levels (i.e., the completion of tasks within a certain time frame) and docket management (i.e., the ability to manage caseloads) account for 55% of an examiner's performance

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[51] *See id.*

[52] *See* Lemley, *Rational Ignorance*, *supra* note 21, at 1500.

[53] *See* Frakes & Wasserman, *Time Allocated*, *supra* note 45, at 41 ("Our analysis finds that as examiners are given less time to review applications upon certain types of promotions, the less prior art they cite, the less likely they are to make time-consuming obviousness rejections, and the more likely they are to grant patents.").

[54] *Patents Dashboard*, U.S. PATENT & TRADEMARK OFFICE, http://www.uspto.gov/dashboards/patents/main.dashxml (last visited Mar. 6, 2016).

[55] When David Kappos was appointed to lead the PTO in 2009, the Obama administration prioritized the reduction of the application backlog. *Locke Statement on Confirmation of David Kappos as Patent and Trade Director*, U.S. DEPT. OF COMMERCE (Aug. 7, 2009, 12:24 PM) http://2010-2014.commerce.gov/print/news/press-releases/2009/08/07/locke-statement-confirmation-david-kappos-patent-and-trade-director (noting that "top priority for the USPTO" is "dramatically reducing the unacceptably long time it takes to process patent applications").

[56] *See* U.S. DEPT. OF COMMERCE, OFFICE OF INSPECTOR GENERAL, USPTO NEEDS TO STRENGTHEN PATENT QUALITY ASSURANCE PRACTICES, FINAL REPORT NO. OIG-15-026-A at 4 (Apr. 10, 2015), https://www.oig.doc.gov/OIGPublications/OIG-15-026-A.pdf [hereinafter OIG REPORT].

assessment, whereas patent quality accounts for only 35%.[57] Moreover, examiners are disciplined substantially more often for production and docket management problems than for patent quality problems: In fiscal year 2013, the PTO issued written warnings to 264 examiners for production problems, 233 examiners received warnings for docket management problems, but only seven examiners received written warnings for quality problems.[58] The Inspector General's report suggests that the rarity of disciplinary actions for quality problems may be attributable to a reluctance on the part of the examiners' supervisors to formally charge errors so as to avoid the time- and labor-intensive rebuttal process with the accused examiners, who may escalate their disagreements with their supervisors through a formal grievance process.[59] In other words, not only is the examiner evaluation criteria slanted toward granting patents, their supervisors may also be disincentivized to police quality because it is time- and labor-intensive.

Perhaps the most visible indication of the PTO's prioritization of the rate of application processing is the dramatic increase in the number of examiners in recent years,[60] during which time the backlog has slowly decreased[61] even as filings have steadily increased.[62] However, the progress in controlling the backlog has coincided with a substantial increase in the rate of patent allowance,[63] which some commentators have surmised has come at the cost of patent quality.[64] Although the PTO has recently begun to focus more on patent quality initiatives,[65] it is unclear how long the PTO's primary strategy of hiring more examiners is sustainable.[66] For

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[57] *Id.* at 5.

[58] *Id.* at 8.

[59] *Id.* at 6.

[60] Dennis Crouch, *USPTO's Swelling Examiner Rolls*, PATENTLY-O (Nov. 30, 2014), http://patentlyo.com/patent/2014/11/usptos-swelling-examiner.html.

[61] *See* UPR APPLICATION, *supra* note 42 and accompanying text.

[62] U.S. PATENT & TRADEMARK OFFICE, *supra* note 6.

[63] *See* Christopher A. Cotropia, Cecil D. Quillen, Jr. & Ogden H. Webster, *Patent Applications and the Performance of the U.S. Patent and Trademark Office*, 23 FED. CIR. B.J. 179, 186 (2013) ("Allowance Rates peaked in 2000, declined until 2009, and then turned up sharply, reaching 89% in 2012 when corrected for all Refiled Continuing Applications.").

[64] *See* Timothy B. Lee, *Study Suggests Patent Office Lowered Standards to Cope with Backlog*, ARSTECHNICA.COM (Apr. 7, 2013, 12:45 PM), http://arstechnica.com/tech-policy/2013/04/study-suggests-patent-office-lowered-standards-to-cope-with-backlog.

[65] *See supra* note 2.

[66] *See* Golden, *supra* note 12, at 486 ("[S]ince 1836, the principal way that the U.S. patent system has responded to the proliferation of patent rights . . . is to multiply the number of hands on deck—most particularly, to multiply the number of examiners at a percentage rate that overall has exceeded that for patents themselves.").

this reason, it is necessary to get a better understanding of what happens on the patentees' side that drives the volume of application filings in order to figure out how patentees, who often have both informational and resource advantages over the examiners,[67] may be induced to exercise greater selectivity in filing applications.

II. THE TWO-SIDED AGENCY PROBLEM

A. Overview

In explaining the phenomenon of high-volume patenting, existing commentary points to a variety of reasons, such as: the practice of defensive patenting;[68] a progressive weakening of both the substantive screen and the costly screen of patent examination;[69] applicants filing early and often in light of U.S. patent rules;[70] and the dramatic rise in U.S. patents procured by foreign entities.[71] Although these reasons seem disparate, they share a common characteristic: they are largely the byproducts of (or at least exacerbated by) the patentees' patent portfolio management practices. In order to change the underlying patenting philosophy of prospective patentees so they become more selective about filing applications and maintaining patents, it is necessary to explore the mechanics of high-volume patenting. To do this, we need to look more closely at the patentees' agents—their employees and others who run the day-to-day patenting operations—and evaluate their situational influences

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[67] *See generally* Sean B. Seymore, *Patent Asymmetries*, 49 U.C. DAVIS L. REV. 963 (2016).

[68] Chien, *Arms Race*, *supra* note 10, at 304.

[69] Ford, *supra* note 7, at 843.

[70] Cotropia, *Early Filing*, *supra* note 8, at 69-70.

[71] Golden, *supra* note 12, at 468. Part of the rise in foreign assignees in the past couple of decades could be attributable to U.S. companies requiring their employee-inventors to assign their patent applications to foreign subsidiaries for tax reasons. *See* Floyd Norris, *Apple's Move Keeps Profit Out of Reach of Taxes*, N.Y. TIMES (May 2, 2013), http://nyti.ms/105vlhr; *see also* Andrew Blair-Stanek, *Intellectual Property Law Solutions to Tax Avoidance*, 62 UCLA L. REV. 2, 4 (2015) (proposing that "existing IP law should be extended to discourage multinationals from using IP to avoid taxes"). To the extent that foreign entities that are *not* subsidiaries of U.S. companies have increased their patenting activity in the U.S., it might be a reflection of their adoption of the patenting strategies of U.S. companies, especially defensive patenting. *See infra* note 161 and accompanying text. In 2009, for example, 19% of patent suits in the U.S. involved at least one foreign defendant. Marketa Trimble, *When Foreigners Infringe Patents: An Empirical Look at the Involvement of Foreign Defendants in Patent Litigation in the U.S.*, 27 SANTA CLARA COMPUTER & HIGH TECH. L.J. 499, 525 (2011).

as well as potential agency problems[72] that might promote high-volume patenting.

Indeed, the patent system, given its complexity and specialized rules and procedures, may be prone to *two-sided* agency problems[73] among its various actors and institutions. The overarching theme in the literature on the PTO is that agency problems—and the mechanisms for managing its agents (i.e., the examiners) to handle the sheer quantity of applications received—have created distortions in the examination process that

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[72] When the respective interests of the principal and that of the agent diverge, an "agency problem" exists. *See* Kathleen M. Eisenhardt, *Agency Theory: An Assessment and Review*, 14 ACAD. OF MGMT. REV. 57, 58 (1989); Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 3 J. FIN. ECON. 305, 308 (1976). Agency costs arise both from the need to supervise and monitor the agent, as well as from the effect of the agent's actions that fail to fully execute the will of the principal or serve the principal's best interests. *See, e.g.*, Samuel Issacharoff & Daniel R. Ortiz, *Governing Through Intermediaries*, 85 VA. L. REV. 1627, 1638 (1999) ("Agents do have costs. . . . They seldom work for free, they require continuing supervision, and, worst of all, they often serve themselves at the expense of their principals.").

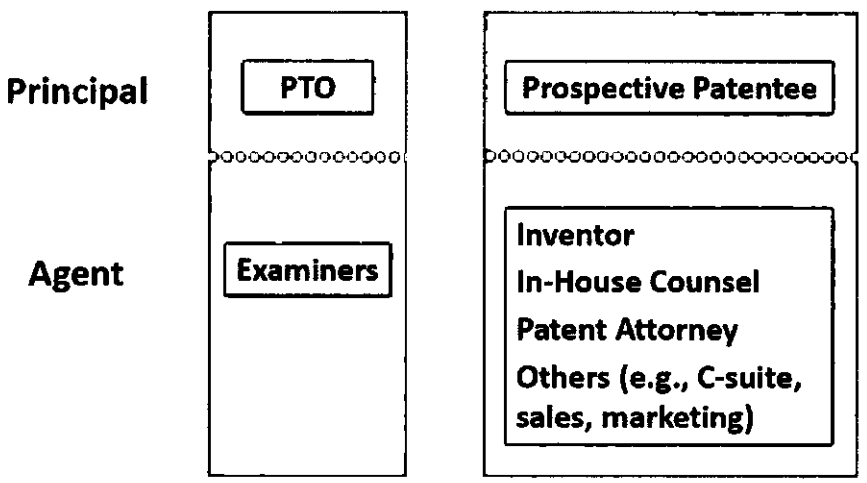
[73] In a two-sided agency problem, the adverse principals are each represented by their respective agents, where each agent's self-interested behavior undermines the interests of his or her respective principal. A classic example of a two-sided agency problem is provided by a securities class action:

> [Securities class actions] are typically characterized by two-sided agency problems. That is, the real parties whose interests are at stake, the shareholders, frequently have little control over the litigation. Instead, the agents on one side, the corporate executives whose actions are being challenged, have an incentive to bury any problems and settle using the company's funds. The agents on the other side, the plaintiffs' lawyers, have an incentive to focus on obtaining the highest fees with as little effort as possible. The end result is that many of these cases result in high payouts for the plaintiff's lawyers, low penalties for the misbehaving executives, and high costs to the shareholders.

Stephen J. Choi, Mitu Gulati & Eric A. Posner, *How Well Do Measures of Judicial Ability Predict Judicial Performance?: A Case Study Using Securities Class Actions*, 33 INT'L REV. L. & ECON. 37, 38 (2013) (citations omitted). Situations that may be susceptible to two-sided agency problems are likely to be those where both principals have difficulty monitoring and controlling the quality of their respective agents' work, either because of the agents' superior expertise relative to the principals or because monitoring and remediation would be cost-prohibitive, labor-intensive, or unreliable. *Cf.*, Stuart J.H. Graham, Robert P. Merges, Pam Samuelson & Ted Sichelman, *High Technology Entrepreneurs and the Patent System: Results of the 2008 Berkeley Patent Survey*, 24 BERKELEY TECH. L.J. 1255, 1311-12 (2009) ("[S]tartups often pay significantly more than incumbents to their prosecuting attorneys, because startups . . . often have difficulty monitoring outside counsel to limit overall costs.").

undermine patent quality.[74] But this problem has two sides: the PTO side and the patentee side. As shown below in Figure 1, on one side is the PTO as the principal with the examiner as the agent. On the other side, the principal is the prospective patentee who files a patent application. If the patentee is an individual inventor who is not representing herself, her agent is simply a patent attorney.[75] If the patentee is a business entity, additional agents beyond the patent attorney will often be present, such as the employee-inventor, the in-house counsel, and others in the organization (e.g., corporate executives, salespeople, and marketing personnel) who might provide input on patent-related issues.

Figure 1: The Two-Sided Agency Problem in Patent Prosecution



In the two-sided agency problem associated with patent prosecution, the PTO-examiner relationship has been extensively studied, both theoretically as well as empirically.[76] In contrast, the relationship between the patentee and her agents has received much less scholarly attention. For this reason, this Section will provide a detailed analysis of the agency issues involving the patentee's agents as they relate to the manner in which patent applications are filed, prosecuted, and maintained as part of a portfolio.

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[74] *See supra* Part I.B.

[75] Patent work may also be performed by "patent agents," who are non-lawyers that are registered to practice before the PTO. To simplify the discussion in this Article, only the term "patent attorney" will be used to indicate individuals who are qualified to represent applicants before the PTO.

[76] *See supra* Part I.B.

In analyzing the patentees' side of the two-sided agency problem, the analysis in this Article will focus primarily on patenting by firms, rather than patenting by individual inventors, because most of the patents that are issued every year are assigned to organizations, with the top corporate assignees obtaining a disproportionate share.[77] In 2014, for example, individuals received less than 6% of issued patents,[78] while the top 300 patenting organizations—most of whom are corporate entities—received 52% of the utility patents issued that year.[79]

Indeed, the filing patterns at the PTO suggest the dominant influence of corporate patenting behavior. Looking at the filing data from October 2008 through September 2014, the monthly filings of utility, plant, and reissue applications[80] (not counting Requests for Continued Examination ("RCEs"))[81] reveal a pattern whereby in any given quarter, the highest number of applications is filed in the last month of that quarter, as shown in Figure 2.[82] That is, during the year, patent application filings are highest in March, June, September, and December.

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[77] This is not a new trend. *See Rights of Employed Inventors: Hearings on H.R. 4732 and H.R. 6635 Before the House Subcomm. on Courts, Civil Liberties, and the Administration of Justice*, 97th Cong., 2d Sess. 1 (1982) (remarks of Rep. Kastenmeier) (reporting that, according to a PTO report, 84% of patents are issued to corporate assignees, "usually the employer of the actual inventor").

[78] Individuals received 19,259 out of 326,033 patents issued in 2014. *Independent Inventor Utility Patents By Country, State, and Year*, U.S. PATENT & TRADEMARK OFFICE (Dec. 2014), http://www.uspto.gov/web/offices/ac/ido/oeip/taf/inv_utl_stc.htm; U.S. PATENT & TRADEMARK OFFICE, *supra* note 6.

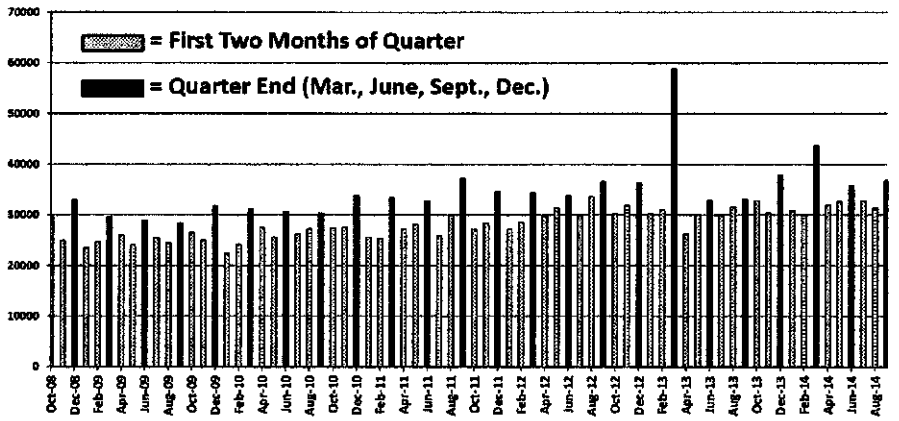
[79] In 2014, the top 300 patenting organizations (including subsidiaries) were issued 155,600 of the 300,678 utility patents granted that year. *Top 300 Organizations Granted U.S. Patents in 2014* 1-2, INTELLECTUAL PROPERTY OWNERS ASSOCIATION (June 15, 2015), http://www.ipo.org/wp-content/uploads/2015/06/2014-Top-300.pdf [hereinafter *2014 IPO Top 300*]; U.S. PATENT & TRADEMARK OFFICE, *supra* note 6.

[80] A spreadsheet compiling the latest version of this information is available on the PTO's dashboard page: http://www.uspto.gov/dashboards/patents/main.dashxml. The author's data is based on the version of the spreadsheet that was available on the PTO's website in January 2015 (on file with author).

[81] RCEs were not counted because the filing of an RCE does not result in a new application number and would not be considered a separate application for purposes of internal metrics that corporations track regarding their patent portfolio.

[82] In preparing Figure 2, the author downloaded the spreadsheet available from the PTO's dashboard page at http://www.uspto.gov/dashboards/patents/main.dashxml in January 2015, and subtracted RCEs from the total number of UPRs that month, and converted the cumulative monthly tallies to month-specific tallies. This modified spreadsheet is on file with the author. (Recently, the PTO has streamlined the manner in which it reports monthly filings on its spreadsheets, such that the aforementioned calculations made by the author in order to extract the month-to-month filing numbers without counting RCEs are no longer necessary.) Using more recent data from the PTO that includes filings in 2015, another scholar, Dennis Crouch, has noted the same pattern in quarterly filings. Dennis Crouch,

Figure 2: Monthly Patent Application Filings (Not Counting RCEs) (72 Months: October 2008 through September 2014)



The filing pattern in Figure 2 suggests planning and active husbandry by business entities[83] in the timing of application filings to meet patent prosecution metrics or related budgets on a quarterly basis.[84] It is also possible that a disproportionate number of bar dates (such as the on-sale bar[85] and the foreign filing deadline for "absolute novelty" countries[86]) fall at the end of the quarter, when public announcements of products or sales activity—which are events that could trigger or start the clock for statutory bars—might increase to meet quarterly sales targets or marketing goals.[87]

Question on Quarterly Patent Filings, PATENTLY-O (Sept. 15, 2015), http://patentlyo.com/patent/2015/09/question-quarterly-filings.html [hereinafter Crouch, *Quarterly Filing Post*].

[83] The focus on quarterly metrics may also be a feature of university technology transfer offices. *See* Mark A. Lemley, *Are Universities Patent Trolls?*, 18 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 611, 616 (2008) (explaining how licensing behavior of university technology transfer offices may be driven by "this quarter's bottom line").

[84] On the PATENTLY-O blog, multiple anonymous comments from posters claiming to have experience as in-house counsel or patent attorneys have noted the influence of quarterly corporate metrics in the timing of filings. Crouch, *Quarterly Filing Post*, *supra* note 82. For a detailed discussion of filing metrics and budgets on filing behavior, see *infra* Part II.B.2.

[85] *See generally* Pfaff v. Wells Elecs., 525 U.S. 55, 57 (1998) ("[N]o person is entitled to patent an 'invention' that has been 'on sale' more than one year before filing a patent application.").

[86] In "absolute novelty" jurisdictions, there is no grace period for pre-filing disclosures of the invention.

[87] *See, e.g.*, Gaurav Batra & Sri Kaza, *Unlocking Sales-Force Potential in the Semiconductor Industry*, MCKINSEY ON SEMICONDUCTORS 70 (Autumn 2012), http://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/semiconductors/issue%202%20autumn%202012/pdfs/mck_on_semiconductors_issue_2_autumn_2012.ashx. ("Semiconductor sales teams are usually managed and provided incentives with an eye on

B. Inside the Patentee Black Box

The behavior of a patentee may be modeled as a composite of the behaviors of multiple self-interested agents working in concert[88] whose behaviors, in the aggregate, may be reflected in outward behaviors by the patentee that may not always correspond to that of a single rational actor.[89] The need to analyze the behaviors of the patentee's agents is underscored by the dominant theorized purpose of the patent system: to incentivize innovation.[90] But incentives provided to a business entity are ultimately acted upon by the *individuals* within that entity,[91] each of whom may prioritize his or her self-interest over that of the firm. In addition, these individuals, being human, are susceptible to cognitive biases that may lead to actions that diverge from the expected effect of the incentives. Relatedly, because multiple individual actors are involved from the initial conception of the invention to the grant of a patent, coordination and/or collective action problems may also affect a firm's patenting behavior.[92] As such, the relationship between any incentives provided by the patent system and the firm's actions in light of those incentives may be complicated by the behavior of the firm's agents. Accordingly, an analysis of the behavior of the firm's agents is necessary to enhance our understanding of why firms patent and what may be needed to change behaviors that give rise to high-volume patenting.

To streamline the analysis, the discussion in this Article will focus on the three actors who are likely to be involved in the day-to-day operations in

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quarterly and full-year sales targets.").

[88] *See* Stephen J. DeCanio & William E. Watkins, *Information Processing and Organizational Structure*, 36 J. ECON. BEHAVIOR & ORG. 275, 277 (1998) ("A distinctive feature of the firm is that it consists of separate agents, and is not a unitary entity with a mind and will of its own." (emphasis omitted)); Roy Radner, *Bounded Rationality, Indeterminacy, and the Theory of the Firm*, 106 ECON. J., 1360, 1368 (1996) ("[T]he decentralization of information and decision [within a firm] confers power on the individual decision-makers (subordinates?), which they may be able to use to further their own interests at the owner's expense." (emphasis omitted)).

[89] *See* DeCanio & Watkins, *supra* note 88 at 277 ("The individuals who make up the organization may have a variety of purposes, and these purposes may range from the strict rationality of *homo economicus* to a much more general suite of behavioral possibilities.").

[90] Mark A. Lemley, *Reconceiving Patents in the Age of Venture Capital*, 4 J. SMALL & EMERGING BUS. L. 137, 139 (2000) [hereinafter Lemley, *Reconceiving*].

[91] Jay Dratler, Jr., Note, *Incentives for People: The Forgotten Purpose of the Patent System*, 16 HARV. J. ON LEGIS. 129, 173 (1979) ("Incentives act only on individuals within a corporation, not on the undifferentiated corporate entity. . . . [I]ntelligent analysis requires that . . . individual motivations be recognized and exploited.").

[92] *Cf.* Ford, *supra* note 7, at 852 (describing coordination problems in a large organization like the PTO).

most corporate patenting scenarios: the employee-inventor, the in-house counsel, and the outside patent attorney. In this model, the employee-inventor is the agent of the firm responsible for inventing; the in-house counsel is the agent tasked with securing patent protection on the employee-inventor's invention and managing the firm's patent portfolio; and the outside patent attorney is the agent hired by the in-house counsel to prepare, file, and prosecute the application. Each agent is considered in turn.

1. Employee-inventors and patent harvesting

The existing literature analyzes the employee-inventor primarily in the context of compensation and invention ownership issues, as opposed to the patenting process.[93] That compensation and invention ownership issues loom large in the employee-inventor literature is unsurprising in light of the prevalence of invention assignment agreements, which obligate employee-inventors to assign (or automatically assign by operation of contract) to their employing firms any inventions and patents that may arise out of the employees' work, and to assist in the prosecution and perfection of the employers' rights in those inventions and patents.[94] While some commentators have questioned the fairness of invention assignment agreements,[95] Robert Merges has observed that such agreements provide practical benefits such as decreasing the likelihood of holdups[96] and improving the alignment of the employee's interests with that of the firm.[97] At the same time, however, invention assignment agreements may

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[93] *See, e.g.*, Richard A. Kamprath, *Patent Reversion: An Employee-Inventor's Second Bite at the Apple*, 11 CHI.-KENT J. INTELL. PROP. 186 (2012); Robert P. Merges, *The Law and Economics of Employee Inventions*, 13 HARV. J.L. & TECH. 1 (1999) [hereinafter Merges, *Employee Inventions*]; Ann Bartow, *Inventors of the World, Unite! A Call for Collective Action by Employee-Inventors*, 37 SANTA CLARA L. REV. 673 (1997); Steven Cherensky, Comment, *A Penny for Their Thoughts: Employee-Inventors, Preinvention Assignment Agreements, Property, and Personhood*, 81 CALIF. L. REV. 595 (1993); Henrik D. Parker, Note, *Reform for Rights of Employed Inventors*, 57 S. CAL. L. REV. 603 (1984); Dratler, *supra* note 91.

[94] *See, e.g.*, Merges, *Employee Inventions*, *supra* note 93, at 8; Cherensky, *supra* note 93, at 598; Dratler, *supra* note 91, at 141; *see also* K.R. Allen, *Invention Pacts: Between the Lines*, 15 IEEE SPECTRUM, Mar. 1978, at 54-59 (reporting that nine out of ten companies with over 250 employees required their employees to execute invention assignment agreements).

[95] *See* Merges, *Employee Inventions*, *supra* note 93, at 10 (listing criticisms); Cherensky, *supra* note 93, at 597 (arguing that preinvention assignment agreements may interfere with the employee's personhood interests).

[96] Merges, *Employee Inventions*, *supra* note 93, at 12.

[97] *Id.* at 26-27, 30.

effectively nullify the incentive aspect of patents for employee-inventors,[98] because, as aptly noted by Catherine Fisk, "the fuel of interest [has] been all but removed from the fire of the employee-inventor's genius."[99]

Because invention assignment agreements automatically vest patent ownership in the company, it might be expected that the employees' enthusiasm for patenting their inventions would be dampened.[100] However, patenting at many companies is not left solely to the initiative of the employee-inventor. Rather, firms typically use a process known as "invention harvesting" or "patent harvesting,"[101] which is the active—often

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[98] *See* Richard S. Gruner, *Corporate Patents: Optimizing Organizational Responses to Innovation Opportunities and Invention Discoveries*, 10 MARQ. INTELL. PROP. L. REV. 1, 30-31 (2006).

[99] Catherine L. Fisk, *Removing the 'Fuel of Interest' from the 'Fire of Genius:' Law and the Employee-Inventor, 1830-1930*, 65 U. CHI. L. REV. 1127, 1129 (1998).

[100] *See* Dratler, *supra* note 91, at 185-86 ("[W]hen the new idea is in its infancy, [employees] know that the corporation will own it if it proves patentable whether they foster its development or not. Hence, for them . . . the patent system provides no particular incentive to . . . increase the rate of innovation generally."); *see also* Jeanne C. Fromer, *Expressive Incentives in Intellectual Property*, 98 VA. L. REV. 1745, 1779, 1780 n.215 (2012) (suggesting that in the context of corporate patenting, the influence of moral rights in motivating inventors may be diminished); Cherensky, *supra* note 93, at 595, 666-67 (analyzing how the allocation of rights to the invention between an employee and his employer in a pre-invention assignment agreement may interfere with the employee-inventor's personhood interests).

[101] Invention or patent "harvesting" is one of the core responsibilities listed in the job description of in-house intellectual property counsel in a variety of industries. *See Senior Corporate Counsel, Open Source and Patents – Large Corporation – Seattle, Wash.*, PATENTLY-O (Mar. 5, 2015) (Amazon.com), http://patentlyo.com/jobs/2015/03/corporate-counsel-corporation-seattle.html; *Patent Counsel – Large Corporation – Cary, N.C.*, PATENTLY-O (Feb. 27, 2012) (SAS), http://patentlyo.com/jobs/2012/02/patent-counsel-large-corporation-cary-nc.html; *Patent Attorney – Large Corporation – Portland, Ore.*, PATENTLY-O (Dec. 13, 2013) (Nike), http://patentlyo.com/jobs/2013/12/patent-attorney-large-corporation-portland-ore.html; *Patent Attorney (EE or Physics) Large Corporation – San Francisco Bay Area, Calif.*, PATENTLY-O (Feb. 25, 2011) (Life Technologies), http://patentlyo.com/jobs/2011/02/patent-attorney-large-corporation-san-francisco-calif.html; *Senior Patent Attorney – Large Corporation – Farmington Hills, Mich.*, PATENTLY-O (Oct. 11, 2011) (Harman International), http://patentlyo.com/jobs/2011/10/senior-patent-attorney-large-corporation-farmington-hills-mich.html; *Patent Attorney – Large Corporation – Fort Collins, Colo.*, PATENTLY-O (Apr. 7, 2015) (OtterBox), http://patentlyo.com/jobs/2015/04/attorney-corporation-collins.html; *Patent Counsel – Large Corporation – San Mateo, Calif.*, PATENTLY-O (June 11, 2015) (SolarCity), http://patentlyo.com/jobs/2015/06/counsel-corporation-san-mateo-calif.html; *IP Manager – Large Corporation – Flexible Location*, PATENTLY-O (Mar. 19, 2013) (Wells Fargo), http://patentlyo.com/jobs/2013/03/ip-manager-large-corporation-flexible-location.html; *IP Attorney – Large Corporation – Bloomington, Minn.*, PATENTLY-O (Sept. 25, 2014) (Seagate), http://patentlyo.com/jobs/2014/09/attorney-corporation-bloomington.html; *Patent Attorney – Large Corporation – Santa Clara, Calif.*, PATENTLY-O (July 18, 2015) (Intel),

systematic and routine—solicitation or generation of invention disclosures on patentable inventions from the firm's research and development ("R&D") and product development efforts.[102]

Patent harvesting may occur through several ways. At its most basic, in-house counsel may periodically remind employees to consider submitting invention disclosures on their current projects.[103] The submission of invention disclosures may also be incorporated as an actual step in the product development process so that it occurs as a matter of routine for all products.[104] In-house counsel may also conduct patent harvesting sessions, where technical employees are invited to a meeting to brainstorm and identify patentable subject matter from existing projects.[105] At some companies, particularly in the pharmaceutical industry,[106] a specific product development group may have a dedicated in-house counsel assigned to it who takes an active role in both monitoring the progress of product development and assisting in the preparation of an invention disclosure when appropriate.[107]

To encourage employee participation in the patent harvesting process, firms use a variety of inducements. For example, bonuses may be awarded to employees at various stages of the patent procurement process, such as: when an invention disclosure is submitted; when an application is filed based on that invention disclosure; and when a patent issues.[108] The size of the bonus is often a fixed amount, independent of the value of the

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http://patentlyo.com/jobs/2015/07/patent-attorney-corporation-clara-calif.html.

[102] *See* Gruner, *supra* note 98, at 30-31.

[103] This information is based on conversations I have had with in-house counsel, who will remain anonymous.

[104] *Id.*

[105] *Id.*

[106] Unlike the other industries, *see supra* note 101, the use of the term "patent harvesting" (and its variants) in the job descriptions of pharmaceutical in-house counsel is relatively rare. *See Senior Counsel*, GOINHOUSE.COM (July 2, 2015) (Teva Pharmaceuticals), http://www.goinhouse.com/jobs/44310-senior-counsel-at-teva-pharmaceuticals; *Patent – Counsel – Elanco*, GOINHOUSE.COM (July 27, 2015) (Eli Lilly), http://www.goinhouse.com/jobs/47676-counsel-patent-elanco-at-eli-lilly; *Patent Attorney*, GOINHOUSE.COM (Aug. 7, 2015) (Momenta Pharmaceuticals), http://www.goinhouse.com/jobs/49048-patent-attorney-at-momenta-pharmaceuticals; *Patent Attorney*, GOINHOUSE.COM (Sept. 28, 2015) (Roche), http://www.goinhouse.com/jobs/57796-patent-attorney-at-roche.

[107] This information is based on conversations I have had with in-house counsel at pharmaceutical companies, who will remain anonymous.

[108] *See, e.g.*, Gruner, *supra* note 98, at 30 n.83; Dratler, *supra* note 91, at 174 n.188. According to a 2009 survey of in-house intellectual property counsel at over 70 companies, 69% (52 out of 75) provided financial rewards and 85% (63 out of 74) provided non-financial recognition such as plaques. *2009 IPO Survey*, *supra* note 31, at 37-38 tbls.56 & 57.

invention, which seems designed to reward the act of disclosure to the company and cooperation during prosecution, rather than the act of invention.[109] In addition, inventors may receive non-monetary rewards such as plaques and formal recognition within the firm.[110] In some cases, the submission of invention disclosures may even be tied to employee performance metrics,[111] thereby generating direct pressure on the employee to participate in the patent harvesting process.[112] Indeed, if a company's patent harvesting process is efficient (or brutal) enough, it may allow the company to build a sizeable patent portfolio despite a culture of indifference or skepticism toward patents among its employees: for example, Google's engineers purportedly hate patents,[113] but in 2014, Google was one of the top ten organizations receiving patents that year.[114]

In effect, the process of patent harvesting may create an artificial incentive to patent among employee-inventors.[115] This may cloud, if not decouple, any causal relationship between patents and innovation as theorized by the traditional utilitarian incentive story.[116] In current practice,

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[109] *See* Dratler, *supra* note 91, at 174 n.188.

[110] *See 2009 IPO Survey*, *supra* note 31, at 38.

[111] Metrics are a staple of employee performance measures within firms. *See, e.g.*, Dan Finnigan, *6 Tips for Using Metrics in Performance Reviews*, INC. (Feb. 5, 2015), http://www.inc.com/dan-finnigan/performance-metrics-for-humans-6-rules-to-remember.html ("[A] company that does a good job of determining the best measures of performance, maximizing data and minimizing emotion, has the best chance to win."); *see also* David Ingram, *Examples of Employee Performance Metrics*, CHRON.COM (last visited Feb. 7, 2016), http://smallbusiness.chron.com/examples-employee-performance-metrics-10879.html ("Effective employee performance review systems require quantifiable metrics to accurately gauge each employee's performance.").

[112] *See* George C. Lewis, David St. John-Larkin & David Wier, *Invention Harvesting Begins At The Top*, LAW 360 (July 21, 2009), http://www.law360.com/articles/109057/invention-harvesting-begins-at-the-top ("When IDFs [Invention Disclosure Forms] were not sufficiently forthcoming, incentive programs ranging from carrots (paying inventors extra for IDFs) to sticks (making the submission of IDFs part of performance goals) were developed.").

[113] *See* Jack Ellis, *Anti-patent engineers a problem, says senior Google IP counsel*, INTELLECTUAL ASSET MANAGEMENT (Sept. 17, 2013), http://www.iam-magazine.com/Blog/Detail.aspx?g=d7906c86-9dd6-4e71-ad86-0d98744831b7.

[114] *See* Ann Bednarz, *Google surges into top 10 in patent race; IBM retains huge lead*, NETWORKWORLD (Jan. 12, 2015, 6:00 AM), http://www.networkworld.com/article/2867369/data-center/google-surges-into-top-10-in-patent-race-ibm-retains-huge-lead.html.

[115] *Cf.* Charles E. Bosomworth & Burton H. Sage, Jr., *How 26 Companies Manage Their Central Research*, RES. TECH. MGMT., May-June 1995, at 40 (reporting survey of twenty-six *Fortune* 500 companies and finding that "You get what you ask for. Reward people for new product ideas and you will get more new product ideas. Reward people for patents and you will get more patents.").

[116] *See* Lemley, *Reconceiving*, *supra* note 90 and accompanying text.

this decoupling is reflected in several ways. *First*, patents are often issued on inchoate or speculative inventions that the patentee either is unable to practice or has no intention of practicing.[117] *Second*, where the product lifecycle is much shorter than the patent term—which is often the case in the high-tech industry—the systematic harvesting and filing of applications leaves a wake of applications pending at the PTO on technologies that may soon be (if not already) obsolete, exacerbating the PTO backlog for relatively little benefit to the patentee.[118] And *third*, numerous patents are routinely granted on incremental[119] or minor[120] improvements that were likely induced not by the prospect of a patent[121] but rather by market trends, the availability of cheaper components, advances in related technologies, and feedback from current or potential customers, especially where "design wins" are at stake.[122]

In operating a patent harvesting program that incentivizes employees to submit invention disclosures,[123] a firm usually has some mechanism for selecting those that merit conversion into applications. However, given that

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[117] *See* Cotropia, *Early Filing*, *supra* note 8, at 69 ("[M]ost inventors file first and ask questions later.").

[118] *See id.* ("[A]fter the initial filing, more information about the invention is uncovered. This . . . prompts the filing of more patent applications to cover variations of the invention that are now better-defined or [commercially valuable]. . . . [A] 'file early, file often' attitude [explains] the ever-rising number of undeveloped patents.").

[119] A substantial number of the companies listed on the patenting leaderboards each year, *see 2014 IPO Top 300*, *supra* note 79, hail from industries known to engage in high levels of incremental patenting, such as consumer electronics, computer hardware, software, and semiconductors. *See* FED. TRADE COMM'N, *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy, Executive Summary*, 19 BERKELEY TECH. L.J. 861, 868 (2004) ("Much of this thicket of overlapping patent rights results from the nature of the technology; computer hardware and software contain an incredibly large number of incremental innovations.").

[120] At times, figuring out whether an invention is already well-known in the art can be difficult for employee-inventors, as many companies forbid them from conducting prior art searches due to willfulness concerns. *See infra* note 255 and accompanying text.

[121] *Cf.* Michael Abramowicz & John F. Duffy, *The Inducement Standard of Patentability*, 120 YALE L.J. 1590, 1594 (2011) ("[I]f the innovation would be created and disclosed even without patent protection, denying a patent on the innovation costs society nothing (because the innovation would be developed anyway) and saves society from needlessly suffering the well-known negative consequences of patents. . . .").

[122] *See* Mark A. Lemley, *The Myth of the Sole Inventor*, 110 MICH. L. REV. 709, 711 (2012); Ted Sichelman, *Commercializing Patents*, 62 STAN. L. REV. 341, 353 (2010). A "design win" occurs when a customer adopts one company's design over that of another. Broadcom Corp. v. Emulex Corp., 732 F.3d 1325, 1336 (Fed. Cir. 2013) ("[Original Equipment Manufacturers] hold competitions to determine which supplier will provide a given chip or component for each generation of a product.").

[123] *See* Bosomworth & Sage, *supra* note 115 and accompanying text.

the bulk of patents have little to no value,[124] whereby only 5% are asserted or licensed,[125] the level of selectivity appears to be rather low in current practice. Possible explanations for this are explored in the next section, which discusses the functions performed by in-house counsel.

2. *In-house counsel and portfolio management*

Companies that maintain a patent portfolio usually have an in-house counsel who is responsible for its management.[126] One of the primary responsibilities of the in-house counsel is to administer the patent harvesting program[127] which, as described in the previous section, is a systematized process for gathering invention disclosures that serve as the raw materials for building the patent portfolio.[128] From the invention disclosures received, a subset is selected by in-house counsel (often with input from a patent steering committee within the company)[129] for conversion into patent applications. The in-house counsel then arranges for the preparation, filing, and prosecution of the patent applications, usually by hiring outside patent attorneys.[130]

In evaluating the behavior of the in-house counsel as an agent of the patentee in the two-sided agency problem that underlies the patent quantity problem, it is necessary to analyze the circumstances within the internal environment of the firm that may shape his decisions.

To begin, the in-house counsel's status as an employee may render him highly sensitive to how his performance will be evaluated by company management. Measuring the in-house counsel's performance based on an assessment of the quality or the value of the patents obtained might be a logical choice, but it would be extremely difficult to do so reliably because

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[124] Parchomovsky & Wagner, *supra* note 22, at 5.

[125] Lemley, *Rational Ignorance*, *supra* note 21, at 1507.

[126] Some smaller companies may not have an in-house counsel dedicated to intellectual property issues. In such cases, the corporate executives may rely on outside patent attorneys to handle patent portfolio management. Much of the discussion in this section relating to in-house counsel would also apply to outside counsel serving in a de facto in house counsel role.

[127] *See supra* note 101 and accompanying text.

[128] *See supra* Part II.B.1.

[129] Patent steering committees or "patent review boards" within a company often include executives and high-level technical employees, along with the in-house counsel. *See* Donal O'Connell, *How to Best Run A Patent Review Board*, IPEG (2014), http://www.ipeg.com/how-to-best-run-a-patent-review-board/ (last visited Aug. 9, 2015).

[130] Some companies have in-house patent attorneys who prepare and prosecute applications. However, the volume of patent preparation work often necessitates the hiring of outside counsel.

patents are, by and large, "credence goods."[131] Claim scope remains uncertain until formally construed by a court,[132] and relatively few patents are tested in litigation.[133] Patent valuation is fraught with uncertainty,[134] especially in those industries where the availability of patent protection or the existence of third-party patents has little effect on whether a product will be developed.[135]

It should not be surprising, then, that readily-quantifiable metrics, such as the number of patent applications filed or the number of patents granted in a given year, are salient features in patent portfolio management. According to a 2009 survey by the Intellectual Property Owners Association, 53% of the companies surveyed had yearly application filing targets,[136] and 85% of those companies either met or exceeded them the previous year.[137] When companies set patent-related quotas or targets,[138] it may lead, in some cases, to a dramatic increase in filings, as facilitated by the companies' patent harvesting processes.[139] Depending on the state of the budget and progress

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[131] *See* Sivaramjani Thambisetty, *Patents as Credence Goods*, 27 OXFORD J. LEGAL STUD. 707, 726-28 (2007); Michael R. Darby & Edi Karni, *Free Competition and the Optimal Amount of Fraud*, 16 J.L. & ECON. 67, 68-69 (1973) (defining "credence goods").

[132] *See* John R. Thomas, *Claim Re-Construction: The Doctrine of Equivalents in the Post-Markman Era*, 9 LEWIS & CLARK L. REV. 153, 168 (2005) ("Only a small percentage of patent claims are litigated, and only a fraction of those asserted ever receive a full-blown construction by the judiciary.").

[133] *See* Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, 19 J. ECON. PERSP. 75, 79 (2005) ("Only 1.5 percent of all patents are ever litigated, and only 0.1 percent are litigated to trial." (citation omitted)).

[134] *See* Frank Russell Denton & Paul J. Heald, *Random Walks, Non-Cooperative Games, and the Complex Mathematics of Patent Pricing*, 55 RUTGERS L. REV. 1175 *passim* (2003).

[135] *See* Lemley, *Ignoring Patents*, *supra* note 29, at 20-21 ("[C]ompanies do not seem much deterred from making products by the threat of . . . patent litigation. Intel continues to make microprocessors, Cisco routers, and Microsoft operating system software, even though they collectively face nearly 100 patent-infringement lawsuits at a time and receive hundreds more threats of suit each year.").

[136] *2009 IPO Survey*, *supra* note 31, at 31 tbl.40; *see* Lemley, *Rational Ignorance*, *supra* note 21, at 1506 n.49 (recounting remarks by in-house counsel suggesting that companies have patent quotas); *see also supra* note 84.

[137] *2009 IPO Survey*, *supra* note 31, at 31 tbl.40.2.

[138] Some of these targets may be benchmarked against the portfolios of other companies. Chien, *Arms Race*, *supra* note 10, at 308.

[139] According to field interviews conducted by Bronwyn Hall and Rosemarie Ziedonis in their study of patenting in the semiconductor industry:

> Several large-scale manufacturers in our sample were visibly "ramping up" their patent portfolios and "harvesting" latent inventions to add to their stock of patents. For example, one firm had shifted from owning a total of 30 patents (in 1990) to filing over 300 patent applications in one year—with an internal goal to "own 1,000 patents by the year 2000." Another manufacturer had instituted an even more ambitious

on patent-related metrics, it is possible that in-house counsel may feel pressure to be more or less permissive when authorizing or recommending the filing of patent applications or continuing the prosecution of existing ones.[140] And because the in-house counsel is the resident patent expert, the company executives—whose familiarity with patents may be largely limited to the popular narrative about patents incentivizing innovation[141]—may be disinclined to second-guess his filing decisions, so long as the applicable filing and budget metrics are met.

At companies where there are no formal patent quotas or targets, there is likely a de facto one in place: If the in-house counsel is too selective in deciding which patents to pursue such that the number of filings drops dramatically or a substantial portion of the patent portfolio development budget is unused, he risks attracting criticism from management[142] or having his budget cut the following year.[143] In addition, because the in-house legal department is generally classified as a "cost center,"[144] the in-house counsel may find it to be in his self-interest to demonstrate the value

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"1,000 by 2000" patent goal while maintaining a relatively stable R&D budget. In this case, the firm had embarked on an explicit campaign to file 1,000 patent applications in a single year by the year 2000. In line with this goal, the number of annual patent applications filed by the firm rose from around 100 in 1993 to over 650 by 1996.

Bronwyn H. Hall & Rosemarie Ham Ziedonis, *The Patent Paradox Revisited: An Empirical Study of Patenting in the U.S. Semiconductor Industry, 1979-1995*, 32 RAND J. ECON. 101, 108 (2001).

[140] *See* O'Connell, *supra* note 129 and accompanying text.

[141] *See* Lemley, *Reconceiving*, *supra* note 90 and accompanying text.

[142] *See* Charles Toutant, *Suit Claims L'Oreal Forced Lawyers to File Junk Patents*, N.J.L.J., (Apr. 20, 2015), http://www.njlawjournal.com/id=1202724003373/Suit-Claims-LOreal-Forced-Lawyers-to-File-Junk-Patents#ixzz3gP0As6JZ (reporting whistleblower suit filed by former patent lawyer for L'Oreal USA, who claimed that he was fired after complaining about company quotas that forced low-quality patent applications to be filed).

[143] In-house counsel with whom I spoke expressed the need to stay close to the budget. According to a survey of corporate IP heads, their intellectual property budget changed between 2011 to 2012 as follows: approximately 40% reported an increase, over 40% reported no change, and less than 20% reported a decrease. David A. Divine & Richard W. Goldstein, *AIPLA Report of the Economic Survey* (2013) (summary only), http://www.aipla.org/about/newsroom/PR/Pages/IP-Fees--Salaries-Benchmarked-in-AIPLA-2013-Report-of-the-Economic-Survey.aspx [hereinafter *2013 AIPLA Survey Summary*].

[144] *See* Carl D. Liggio, *The Changing Role of Corporate Counsel*, 46 EMORY L.J. 1201, 1219 (1997) ("Within the corporate hierarchy, the legal department is a cost center, not a profit center. Accordingly, corporate legal departments must find ways to contain costs and substantially increase productivity."). *See also 2009 IPO Survey*, *supra* note 31, at 24 tbl.23 (reporting that in-house intellectual property counsel at 64 out of 75 companies surveyed (85%) responded that the in-house intellectual property department was not a corporate profit center).

of his role within the company through the volume of his patenting activities. More generally, by virtue of being assigned to manage the patent portfolio, the in-house counsel may be unconsciously primed to advocate for its growth.[145] These considerations may thus prompt in-house counsel to favor actions that maximize the number of patent filings or to progressively enlarge the portfolio each year to the extent allowed by the budget.[146] Indeed, if we compare the top 300 patentees in 2014 with those in 2013, only 10.7%, or 32 patentees, were newly-added in 2014,[147] which suggests that most of the organizations on that list were, at the very least, maintaining their patenting levels, if not increasing them. Of the 268 patentees that were on the list in both 2014 and 2013, the grant numbers for 68.3% of them had increased from the previous year, with a median increase of 14.4%.[148] (For the remaining minority of patentees whose grant numbers decreased, the median decrease was 9.5%.[149])

The analysis of in-house counsel would not be complete without a consideration of the external environment and the company executives who set the portfolio metrics (i.e., budgets and quotas) in light of it. Specifically, the environment external to the firm may prompt company executives to support—or, in some cases, affirmatively push for—high-volume patenting by in-house counsel. One of the key justifications for high-volume patenting is for "defensive" purposes whereby companies stockpile patents in order to assert them in counterclaims if they are sued by a competitor.[150] This has arguably led to a patent "arms race," in which companies perceive a strategic necessity to bulk up their patent portfolios in order to make themselves unattractive litigation targets,[151] as well as to strengthen their bargaining positions when negotiating licenses (including

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[145] *Cf.* Linda Babcock, George Loewenstein, Samuel Issacharoff & Colin Camerer, *Biased Judgments of Fairness in Bargaining*, 85 AM. ECON. REV. 1337, 1341 (1995) (reporting results of experiments suggesting that "[t]here was a strong tendency toward self-serving judgments of fairness and predictions of the judge's award when subjects knew their roles [as either the plaintiff's representative or the defendant's representative]").

[146] *See, e.g.*, Joseph A. Capraro, Jr., *An Insider's View of the Relationship Between Inside and Outside Counsel in Patent Portfolio Management*, METROPOLITAN CORPORATE COUNSEL (Aug. 15, 2012), http://www.metrocorpcounsel.com/articles/20140/insider%E2%80%99s-view-relationship-between-inside-and-outside-counsel-patent-portfolio-manag ("Corporate legal departments are trying to maintain or even increase a desired level of patent activity with a flat or smaller budget. . . . [W]hen companies are planning their budgets, as a starting point, they estimate the amount of money associated with their desired number of patent filings.").

[147] *2014 IPO Top 300*, *supra* note 79.

[148] *Id.*

[149] *Id.*

[150] *See* Chien, *Arms Race*, *supra* note 10, at 299.

[151] *Id.*

cross-licenses)[152] or when joining a patent pool.[153] At the same time, the need to cost-justify (or at least alleviate the expenses of) a large portfolio has prompted companies to explore monetization.[154] To this end, some companies, like IBM, have conducted licensing campaigns that exploit the sheer size of their portfolios to effectively coerce licenses from entities with relatively modest portfolios.[155] Such campaigns, in turn, have further encouraged the development of ever-larger portfolios.[156] Other companies have monetized their portfolios by selling patents on the secondary market, from which patent assertion entities source their patents.[157] In view of the combination of defensive patenting and the various ways in which a large portfolio may be exploited to offset its own operating costs, the decision to engage in high-volume patenting is likely a self-reinforcing practice, given the reluctance of any single company to unilaterally disarm[158] and the "social proof"[159] furnished by the existing norms of industry-wide patenting behavior,[160] which also appears to have spread internationally.[161]

3. *Patent attorneys and commoditized patenting*

In order to meet a sizeable patent quota or target while staying under budget, in-house counsel may find it necessary to adopt a high-volume-low-

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[152] *Id.* at 307-10.

[153] In some patent pools, a member's share of the earnings may depend on the quantity of patents contributed to the pool. Anne Layne-Farrar & Josh Lerner, *To Join or Not to Join: Examining Patent Pool Participation and Rent Sharing Rules*, 29 INT'L J. INDUS. ORG. 294, 296 (2011) (noting that in "numeric proportional rules . . . members receive a share of the aggregate earnings based on the number of patents they contribute to the pool").

[154] *See 2009 IPO* Survey, *supra* note 31 and accompanying text.

[155] *See* Chien, *Arms Race*, *supra* note 10, at 305-06.

[156] *See id.* at 309 ("Large portfolios have spawned the development of other large portfolios.").

[157] *See id.* at 340-41.

[158] *See* R. Polk Wagner, *Understanding Patent-Quality Mechanisms*, 157 U. PA. L. REV. 2135, 2155 (2009) (observing that "even if most firms would be better off with high-quality patents (and fewer of them), adopting such a strategy in the face of others' more numerous (and lower quality) patents is disadvantageous").

[159] *See* ROBERT B. CIALDINI, INFLUENCE: THE PSYCHOLOGY OF PERSUASION 142 (1993) (describing the phenomenon of "social proof" as one where we look to the behavior of others to decide proper behavior for ourselves); *see also* Chien, *Arms Race*, *supra* note 10, at 306 (observing that "demonstration effects," which are "behavioral changes caused by observing others," may shape firms' patenting strategies).

[160] *See* Chien, *Arms Race*, *supra* note 10, at 306-07.

[161] *See* Kimberly A. Moore, *Xenophobia in American Courts*, 97 NW. U. L. REV. 1497, 1532 (2003) ("For foreign competitors to thrive in the U.S. marketplace, they must learn to play by U.S. rules, and those that play, play hard.").

cost approach to patenting.[162] This may contribute to what some have characterized as the "commoditization" of patent prosecution, where legal services are paid for at rates that provide patent attorneys[163] thin profit margins in exchange for a high volume of work.[164]

A key feature of the commoditization of patent prosecution is the use by in-house counsel of "fixed-fee arrangements," whereby a fixed (i.e., predetermined) fee would be charged by the patent attorney for a specific prosecution task (e.g., preparing an application or responding to an office action) regardless of the actual time spent on it.[165] In exchange, the company gives the patent attorney a high volume of work. Companies use fixed-fee arrangements in order to better control the costs of prosecuting a high volume of patent applications, especially where the value of any individual patent in the portfolio is low.[166] Because a substantial percentage of companies use fixed-fee arrangements,[167] it is possible that it has impacted the general market for patent prosecution services: The amounts patent attorneys can feasibly charge for a task under an hourly billing regime—and still remain competitive with attorneys who agree to fixed-fee arrangements—are likely to be depressed in light of the existence of the latter so as to render patent prosecution a low-margin practice overall.[168]

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[162] *See* Chien, *Arms Race*, *supra* note 10, at 338.

[163] Some companies do have in-house patent attorneys who perform prosecution. However, this Article focuses on outside patent attorneys because high-volume patenting often requires distributing the workload to multiple attorneys, if not firms.

[164] *See, e.g.*, Andrew Strickler, *BigLaw Chases IP Boutiques In Search For Dollars*, LAW360 (Nov. 22, 2013, 10:08 PM), http://www.law360.com/articles/491030/biglaw-chases-ip-boutiques-in-search-for-dollars (noting patent prosecution as "an increasingly commoditized area under rate pressure from clients and outsourced legal service providers, both domestically and overseas"); *see also* Debra Bruce, *Avoiding the Commoditization of Your Law Practice*, THE PRACTICE MANAGER 1, 4 (Aug. 13, 2007), http://www.texasbarcle.com/cle/site/LawOfficeMgmtNewsletters/07_08_13.pdf.

[165] *See generally 2009 IPO Survey*, *supra* note 31, at 25; Chien, *Arms Race*, *supra* note 10, at 338.

[166] *See* Parchomovsky & Wagner, *supra* note 22, at 5; Chien, *Arms Race*, *supra* note 10, at 338.

[167] According to one survey, fixed-fee billing arrangements were used for patent application preparation and office action responses by 47% and 33% of the companies surveyed, respectively. *2009 IPO Survey*, *supra* note 31, at 25 tbl.25 & 26 tbl.26.

[168] The range of fees charged for application preparation and office action responses under a fixed-fee regime is comparable to the general average. *Compare 2009 IPO Survey*, *supra* note 31, at 25 tbl.25.1 & 27 tbl.26.1 *with 2013 AIPLA Survey Summary*, *supra* note 143, at 27 (providing median charges for U.S. utility patents for multiple years, including 2008 and 2010).

The resulting commoditized pricing for patent prosecution services introduces the potential for discouraging patent attorneys from spending the time necessary to perform a task in a manner that would yield high-quality patents.[169] For example, if a patent attorney's billing rate is $400 per hour, and if the fixed fee or the hourly total that can be feasibly charged (based on the market for his services) for a new application is $8,000,[170] then that attorney will endeavor to spend no more than twenty hours preparing the application,[171] which, depending on the technology, may yield a thin or weak specification (because detailed ones take more time to prepare) and poorly-drafted or overly broad claims (because prior art searches are time-consuming and may not be authorized by the client if extra fees will be charged).[172] Similarly, if an attorney can charge only $2,800 for an office action response,[173] the attorney might decide to spend no more than seven hours on it, which may yield a less-than-rigorous analysis of patentability issues in response to the examiner's rejections.[174]

In essence, just as the agents on the PTO's side of the two-sided agency problem may engage in behaviors that adversely affect patent quality in order to examine a high volume of applications, the agents on the patentees' side may also engage in analogous behaviors that adversely affect patent quality in order to generate and prosecute the high volume of applications that are eventually filed at the PTO.

III. SOLVING THE QUANTITY PROBLEM

The previous section described the mechanisms underlying high-volume patenting, in particular the situational influences that act on the patentees' agents. This section considers ways to change the circumstances under which the patentees' agents operate in order to induce greater selectivity in patenting.

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[169] *Cf.* Chien, *Arms Race*, *supra* note 10, at 338.

[170] For typical fees charged, *see 2013 AIPLA Survey Summary*, *supra* note 143, at 27 and *2009 IPO Survey*, *supra* note 31, at 25 tbl.25.1 & 27 tbl.26.1.

[171] *Cf.* Brian J. Love, *Interring the Pioneer Invention Doctrine*, 90 N.C. L. REV. 379, 408 n.118 (2012) ("Some commentators have cautioned that agency costs may be higher than expected in the inventor-prosecutor relationship.").

[172] *Cf.* Chien, *Arms Race*, *supra* note 10, at 338.

[173] *See 2013 AIPLA Survey Summary*, *supra* note 143, at 27; *see also 2009 IPO Survey*, *supra* note 31, at 25 tbl.25.1 & 27 tbl.26.1.

[174] *See* Chien, *Arms Race*, *supra* note 10, at 338; Love, *supra* note 171, at 408 n.118.

A. Existing Proposals

To the extent that the literature focuses on the problem of patent quantity, the most commonly-proposed solutions focus on enhancing the ability of the PTO to filter or reject patent applications, with the goal of decreasing the number of low-quality patents issued. Some of the more salient proposals include: (1) Increasing the fees collected by the PTO as a costly screen;[175] (2) enhancing the examination process (e.g., providing more information to examiners[176] or applying existing patentability standards more rigorously[177]); and (3) eliminating or restricting "continuing" applications.[178] Each of these proposals will be discussed in turn.

In recent years, maintenance fee reform has been proposed as a means for pruning large portfolios and restricting the supply of patents available to patent assertion entities through the secondary market.[179] However, increasing maintenance fees, alone, is unlikely to stem the unremitting flow of applications into the PTO. In order for fee increases to affect prosecution behavior, the filing fees would also need to be increased along with the maintenance fees. But unless the fee increases are substantial, the circumstances under which the patentee's agents operate may not fundamentally change, especially if a fee increase may be neutralized by increasing the patent portfolio management budget or by shifting the prosecution work to lower-cost patent attorneys, which may further aggravate the commoditization problem in patent prosecution.[180] If the fees were raised high enough to trigger a substantial change in the volume of applications filed, it may have the effect of concentrating patent

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[175] *See, e.g.*, Ford, *supra* note 7, at 866-67.

[176] An example of this is the Peer-to-Patent project. *See Peer-to-Patent*, WHITEHOUSE.GOV, https://www.whitehouse.gov/open/innovations/Peer-to-Patent (last visited March 7, 2016).

[177] *See infra* note 189 and accompanying text.

[178] *See infra* note 196 and accompanying text.

[179] *See, e.g.*, Brian J. Love, *An Empirical Study of Patent Litigation Timing: Could a Patent Term Reduction Decimate Trolls Without Harming Innovators?*, 161 U. PA. L. REV. 1309, 1357 (2013) (proposing an "increase [in] the frequency and magnitude of maintenance fee payments in the latter half of the patent term"); James Bessen & Brian J. Love, *Make the Patent "Polluters" Pay: Congress, Pigovian Fees Can Curb Patent Abuse Too*, 4 CALIF. L. REV. CIR. 84, 89-90 (2013) (proposing dramatic increases in maintenance fees); David S. Olson, *Removing the Troll from the Thicket: The Case for Enhancing Patent Maintenance Fees in Relation to the Size of a Patent Owner's Non-Practiced Patent Portfolio* 2 (Aug. 30, 2013) (unpublished manuscript), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2318521 (proposing that "maintenance fees be increased according to a sliding scale tied to the number of non-practiced patents a patent owner has in its portfolio").

[180] *See supra* Part II.B.3.

ownership[181] in fewer—and larger—companies that are better able to absorb the fee increases, whereas undercapitalized entities, such as startups or small businesses, may be less able to afford patent protection[182]—unless the fees are discounted based on the size and the gross income of the entity.[183]

At best, fee increases provide a partial solution to the quantity problem because they are unlikely to materially change the justifications and motivations that fuel the patenting machinery within a firm.[184] It would be preferable to induce patentees to file applications only on technologies that would not have been invented in the absence of the availability of patent protection.[185] But this type of selectivity would be difficult to achieve solely with a fee increase because the patenting needs of each firm may vary considerably according to the technology, the industry, and the specific circumstances of that firm. Furthermore, a substantial fee hike may necessitate an increase in the number (and complexity) of discounting levels beyond the small- and micro-entity classes currently available.[186] Relatedly, the effectiveness of the degree of discounting provided to an entity class may be difficult to ascertain. And finally, fee increases could have the effect of accelerating the placement of patent applications and patents on the secondary market from which patent assertion entities stock their portfolios.[187] Specifically, fee increases may prompt in-house counsel to "churn" their portfolios more frequently, selling non-core patent assets earlier in the patent lifecycle in order to avoid paying high maintenance fees. Indeed, some patent brokers systematically monitor activity at the PTO for the purpose of finding applications and patents that are about to

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[181] The social utility of concentrating patent ownership is, at best, uncertain. *See generally* Tom Ewing & Robin Feldman, *The Giants Among Us*, 2012 STAN. TECH. L. REV. 1 *passim* (2012) (analyzing patent mass aggregators).

[182] *See* Golden, *supra* note 12, at 488 (questioning wisdom of "increased fees that make the patent system less accessible to undercapitalized innovators"); *see also* Graham et al., *supra* note 73, at 1310 ("We find that, among technology startups, the cost of getting a patent is the most common reason cited for not patenting a major technology.").

[183] Currently, the PTO provides fee discounts for small and "micro" entities. *See* U.S. PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 509.02 (2015), http://www.uspto.gov/web/offices/pac/mpep/s509.html (defining small entity status); *id. at* § 509.04 (defining micro entity status).

[184] *See supra* Part II.B.

[185] *See* Abramowicz & Duffy, *supra* note 121 and accompanying text.

[186] *See* U.S. PATENT & TRADEMARK OFFICE, *supra* note 183, at §§ 509.02 & 509.04.

[187] However, some commentary suggests that this may not be a wholly negative development. *See* Michael Risch, *Licensing Acquired Patents*, 21 GEO. MASON L. REV. 979, 979-80 (2014).

lapse (or have lapsed within the grace period for revival) for failure to pay fees in order to approach the applicant or patentee to execute a transfer.[188]

Likewise, it is uncertain whether proposals for enhancing the ability of patent examiners to substantively analyze the merits of an invention to better screen invalid claims—such as shoring up the disclosure requirement[189] and bringing additional prior art to the attention of the examiner[190]—would materially change things, particularly if the proposals would create additional work for the agents of the PTO and that of the patentees. Agency problems may blunt any potential salutary effects of these proposals if the work habits of the agents evolve in a manner that either avoids any extra work required or results in less work performed on other tasks. For example, strengthening the disclosure requirement would likely require patent attorneys (with their commoditized practices)[191] to prepare heftier specifications, and patent examiners (with their docket-management pressures)[192] to review applications more rigorously for compliance with 35 U.S.C. §112. Notably, the avoidance of extra work by examiners is suggested by an empirical study by Christopher Cotropia, Mark Lemley, and Bhaven Sampat, which reveals that examiners rely almost exclusively on the results of their own prior art searches, while largely ignoring the prior art submitted by the patent applicant, when preparing office actions.[193] This suggests that the existing "duty of disclosure" and the inequitable conduct doctrine might not be working as intended, such that the effectiveness of patent reform proposals that call for bringing additional prior art to the examiner's attention may be uncertain.[194] Although the agents' work (on either side) is likely to be monitored, assessing patent quality is an uncertain, labor-intensive task, such that the

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[188] The monitoring of patent assets by patent brokers may be accomplished by patent analytics software that crawls patent office databases. AcclaimIP, for example, allows third parties to systematically track maintenance fee payments so as to allow "[p]atent brokers . . . to 'dumpster dive' for potential treasures being abandoned by mistake, or because the entity cannot afford to renew patents." *AcclaimIP Manual 2015: EXPIRATION and TRANCHE Field Codes*, ACCLAIMIP, http://help.acclaimip.com/m/acclaimip_help/l/179231-mdate-and-tranche-field-codes (last visited Mar. 7, 2016)

[189] *See, e.g.*, Lisa Larrimore Ouellette, *Do Patents Disclose Useful Information?*, 25 HARV. J. L. & TECH. 545, 590-92 (2012); Jeanne C. Fromer, *Patent Disclosure*, 94 IOWA L. REV. 539, 591-92 (2009).

[190] *See* WHITEHOUSE.GOV, *supra* note 176 and accompanying text.

[191] *See supra* Part II.B.3.

[192] *See supra* Part I.B.

[193] Christopher A. Cotropia, Mark A. Lemley & Bhaven Sampat, *Do Applicant Patent Citations Matter?*, 42 RES. POL'Y 844 (2013). An examiner who is pressed for time is more likely to rely on his search results rather than comb through the voluminous prior art submissions of the applicant. *See id.* at 851.

[194] *Id.* at 851-52.

agents responsible for monitoring quality might themselves shirk or perform their supervisory tasks in a perfunctory manner, as we have seen in the context of examiner performance reviews.[195]

Finally, some commentators have pointed to "continuing applications" as a major contributor to the application bloat, and have called for their elimination or restriction as a means of fixing the patent system.[196] There are several varieties of "continuing applications"—namely, continuation applications,[197] divisional applications, and continuations-in-part.[198] Some commentators also consider Requests for Continued Examination ("RCE") as a form of "continuing application."[199] According to a recent study, "continuing applications" (including RCEs) constituted 43% of all filed applications in 2012.[200] But the bulk of the continuing applications reported in that study are RCEs, which, unlike the other varieties of "continuing applications," do not entail the filing of a new application, but is merely a procedural device for adding another round of examination to an existing application.[201] The elimination of RCEs is unlikely to materially decrease filings because they are generally filed for reasons relating to the completion of prosecution.[202] RCEs are often filed to enter amendments[203]

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[195] *See supra* notes 56-59 and accompanying text.

[196] *See* Cecil D. Quillen, Jr. & Ogden H. Webster, *Continuing Patent Applications and Performance of the U.S. Patent and Trademark Office—One More Time*, 18 FED. CIR. B.J. 379, 402 (2009); *see also* Mark A. Lemley & Kimberly A. Moore, *Ending Abuse of Patent Continuations*, 84 B.U. L. REV. 63 (2004).

[197] To be clear, a "continu*ation* application" is a type of "continu*ing* application."

[198] U.S. PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 201.02, http://www.uspto.gov/web/offices/pac/mpep/s201.html (last visited Mar. 7, 2016).

[199] *See, e.g.*, Cotropia, Quillen & Webster, *supra* note 63, at 181-82.

[200] *Id.* at 183.

[201] *See* 37 C.F.R. § 1.114(a) ("If prosecution in an application is closed, an applicant may request continued examination of the application by filing a submission and the fee. . . .").

[202] In response to the PTO's Federal Register notice seeking comments on RCE practice, *see* Request for Comments on Request for Continued Examination (RCE) Practice, 77 Fed. Reg. 72830 (Dec. 6, 2012), various intellectual property law groups have filed comments listing reasons for filing RCEs that have more to do with completing prosecution rather than a need to file additional claims. In particular, applicants often file RCEs in order to get claim amendments entered and also to request consideration of prior art after allowance—particularly in related applications. *See, e.g.*, Richard F. Phillips, Comments 3-4 (Feb. 4, 2013) (Intellectual Property Owners Association), http://www.uspto.gov/sites/default/files/patents/law/comments/ipo_20130204.pdf; *see also* Jeffrey I.D. Lewis, Comments 8 (Feb. 4, 2013) (American Intellectual Property Law Association), http://www.uspto.gov/sites/default/files/patents/law/comments/aipla_20130204.pdf. The full list of comments are available at http://www.uspto.gov/patent/laws-and-regulations/comments-public/comments-request-comments-request-continued-examination.

[203] *See, e.g.*, Mark A. Lemley & Bhaven N. Sampat, *Examining Patent Examination*, 2010 STAN. TECH. L. REV. 2, ¶12 & tbl.4 (2010) (reporting results of empirical study

or to cite references from a foreign counterpart or a co-pending application[204] that came to the attention of the applicant after allowance.[205] Most applicants appear to want *a* patent to issue from an application, as opposed to multiple patents, which may explain the relatively low proportion of continuation application filings relative to RCEs.[206] Indeed, the elimination of continuation applications is unlikely to substantially decrease application volume: In 2012, for example, they constituted only 16% of the applications filed without counting RCEs.[207] Moreover, it may be possible to circumvent restrictions on continuation applications by filing multiple applications on the same (or similar) invention in a single day or, alternatively, by filing numerous claims in a single application to induce the examiner to require restriction and election of a subset of the claims by the applicant, who could then file divisional applications for the remaining claims.[208]

B. A Working Requirement for Patent Litigation

A common limitation in the existing proposals is the scant attention paid to the circumstances that render high-volume patenting readily justifiable, if not wholly desirable, for the patentees' agents—in particular, the in-house counsel who manages the patent portfolio and the corporate executives who evaluate his performance and set the portfolio budget. The analysis of the patentees' side of the two-sided agency problem in patent prosecution[209] suggests that one way to mitigate the patent quantity problem may lie in creating conditions that render high-volume patenting more difficult to cost-justify, so as to induce the patentees' agents to exercise greater selectivity in the applications filed and the patents kept in force. To this

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showing that over 85% of patents issued from applications filed in January 2001 were amended, and concluding that "[t]hese numbers suggest that the vast majority of applicants, particularly the applicants who obtain patents and those who are still actively trying to do so, do so in part by amending their claims in response to examiner concerns").

[204] *Cf.* McKesson Info. Solutions, Inc. v. Bridge Med., Inc., 487 F.3d 897, 901 (Fed. Cir. 2007) (exemplifying the consequences of not citing co-pending applications).

[205] *See supra* note 202.

[206] *See* Cotropia, Quillen & Webster, *supra* note 63, at 183 fig.3.

[207] This figure was calculated as follows: in 2012, 533,390 applications were filed, *id.* at 181, which includes 157,908 RCEs, *id.* at 183. Thus, the number of applications filed in 2012 without counting RCEs is 375,482. As for continuation applications, 59,819 were filed in 2012, *id.* at 183, which is 16% of the total number of applications without counting RCEs (i.e., 59,819/375,482).

[208] *See generally* U.S. PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE §803, http://www.uspto.gov/web/offices/pac/mpep/s803.html (describing restriction requirement).

[209] *See supra* Part II.

end, this Article proposes that a working requirement be imposed for asserting patents in federal court, whereby, with limited exceptions, a patentee's ability to seek remedies for the infringement of a specific patent claim would depend on if—and when—the patentee had engaged in activities directed to practicing the specific invention set forth in that claim.[210]

The working requirement proposal is premised on the essential nature of a patent as being a right to sue,[211] whereby a firm's patent portfolio strategy may be informed by its litigation strategy and vice versa. This proposal, then, seeks to effect a change in patenting behavior by changing the litigation environment from one that allows any patent claim to be asserted to one that effectively provides remedies for only those claims that are practiced by the patentee (with limited exceptions).

Recently, working requirements and their equivalents have attracted attention in the scholarly literature as a way to combat the activities of patent assertion entities.[212] However, the literature's focus on "trolling"

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[210] To be clear, the working requirement proposed in this Article focuses on the patentee's ability to obtain remedies for infringement. It does not entail the forfeiture or early expiration of a patent solely for the failure to work, unlike some proposals such as the one described by Maayan Perel in *From Non-Practicing Entities (NPEs) to Non-Practiced Patents (NPPs): A Proposal for a Patent Working Requirement*, 83 U. CIN. L. REV. 747, 752 (2015) (proposing that non-practiced patents would fall into the public domain after a certain period of time).

[211] *See* Joseph Scott Miller, *Building a Better Bounty: Litigation-Stage Rewards for Defeating Patents*, 19 BERKELEY TECH. L.J. 667, 739 n.46 (2004) ("It is thus, in a sense, more accurate to say that a patent confers a right to sue, rather than a right to exclude."); Carl Shapiro, *Antitrust Limits to Patent Settlements*, 34 RAND J. ECON. 391, 395 (2003) ("What the patent grant actually gives the patent holder is the right to sue to prevent others from infringing the patent. . . . [A] real patent does not give the patentee 'the right to exclude' but rather the more limited 'right to *try* to exclude' by asserting its patent in court." (emphasis in original)).

[212] *See, e.g.*, John F. Duffy, *Reviving the Paper Patent Doctrine*, 98 CORNELL L. REV. 1359, 1359 (2013) (noting that the demise of the "paper patent" doctrine "opened the door" for the dramatic rise of "patent trolls"); Oskar Liivak, *When Nominal Is Reasonable: Damages for the Unpracticed Patent*, 56 B.C. L. REV. 1031, 1031 (2015) (arguing against the prevailing "troll-enabling interpretation of patent law's reasonable royalty provision"); Daniel Harris Brean, *Ending Unreasonable Royalties: Why Nominal Damages Are Adequate to Compensate Patent Assertion Entities for Infringement*, 39 VT. L. REV. 867, 888 (2015) (noting that current practices provide windfalls to patent assertion entities); Perel, *supra* note 210, at 752 (proposing adoption of working requirement as a solution to trolling behavior); Samuel F. Ernst, *The Lost Precedent of the Reverse Doctrine of Equivalents*, 18 VAND. J. ENT. & TECH. L. (forthcoming 2016) (manuscript at 8), http://ssrn.com/abstract=2667975 (last visited Mar. 7, 2016) (proposing reverse doctrine of equivalents as an effective defense against non-practicing entities); Tina M. Nguyen, Note, *Lowering the Fare: Reducing the Patent Troll's Ability to Tax the Patent System*, 22 FED. CIR. B.J. 101, 101-02 (2012) (proposing ITC-type domestic industry requirement in the

behavior reflects a limited view of the potential benefits of imposing a working requirement. Largely absent from the literature is an analysis of how a working requirement for asserting patents in district court might exert a salutary influence on patenting behavior more generally, particularly in relation to the practice of high-volume patenting that creates distortions throughout the patent system, of which the activities of patent assertion entities constitute just one aspect.[213]

By imposing a working requirement such that fewer patents qualify for litigation, corporate decisions to file applications and maintain patents may become more selective. In-house counsel—as well as the corporate executives who set the patent portfolio budget—may find it increasingly difficult to justify the cost of building and maintaining a large portfolio, whether for defensive or offensive purposes, if a substantial number of patents would be effectively unenforceable because they are not being practiced. Given that a substantial proportion of suits between operating companies appear to involve unpracticed patents or companies that are not technologically close,[214] a working requirement may mitigate the general risk of suit as well as the need for defensive patenting.

To induce patentees to exercise greater selectivity in patenting, a suitable working requirement would be one that, with limited exceptions, effectively restricts the patentee to asserting only those claims that it has practiced or "worked" (as defined below) by the time of filing suit, whereby retrospective remedies would depend on the extent of the patentee's injuries incurred during the time period in which it had practiced each asserted claim *contemporaneously* with the accused infringer, and prospective remedies would depend on the patentee's plans for continued practice.[215]

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district courts to hinder ability of "patent trolls" to file suit).

[213] *See supra* Part I.A.

[214] *See, e.g.*, James Bessen & Michael J. Meurer, *The Patent Litigation Explosion*, 45 LOY. U. CHI. L.J. 401, 419 (2013) ("[A]lthough many suits, probably the majority, occur between firms that are close either in the market place or in their patent portfolios, a substantial percentage also occur between firms that are distant."); *see also* Colleen V. Chien, *Of Trolls, Davids, Goliaths, and Kings: Narratives and Evidence in the Litigation of High-Tech Patents*, 87 N.C. L. REV. 1571, 1607 (2009) (hypothesizing possible reasons why defensive patenting may not be effective in mitigating risk of suits from other companies, including the possibility that "[operating company] plaintiffs are suing in areas in which they don't operate" and that "[t]he [operating company] plaintiff may have acquired the patent at suit from another company or may be in the practice of filing patents over inventions that never mature into products").

[215] A key feature of the proposed working requirement is "claim correspondence" whereby the patentee would need to work the specific claim asserted against the accused infringer. Some have suggested that requiring claim correspondence might be unfair to the patentee if the patentee's product and the accused device are similar but cannot be covered by the same claim. However, claim correspondence is what allows the universe of assertable

For the working requirement proposed in this Article, the following activities would qualify as practicing or "working" a patent claim by the patentee:

(i) manufacturing or implementing a product or service covered by the claim;

(ii) using the claimed process or method to manufacture or implement a product or service;

(iii) licensing in order to transfer technology and know-how to a contracting party who will commercialize the claimed invention, where the contracting party had not independently obtained or developed the claimed invention prior to entering into a license (i.e., ex ante licensing);[216] and

(iv) importing[217] a product or service resulting from the patentee's activities listed in items (i), (ii), or (iii) that occur outside the United States.

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claims (and patents) to be dramatically narrowed so as to substantially decrease the risk of litigation that would otherwise drive high-volume patenting, whether for defensive or offensive (i.e., monetization) purposes. An additional benefit of the claim correspondence requirement is that the parties' claim construction positions would be informed by at least two products—one for the patentee and one for the accused infringer, instead of just the accused device—which could yield a better, more robust construction by the court. That being said, to mitigate the potential harshness of the claim correspondence rule, it could be replaced with a "patent correspondence" rule whereby the patentee would need to work at least one claim of a patent it asserts, which may not necessarily be the claim asserted against the accused infringer. Notably, this latter rule is currently used for satisfying the technical prong of the domestic industry requirement in ITC proceedings. *See infra* note 230 and accompanying text. However, given that it is not uncommon for a single patent to issue with dozens—if not hundreds—of claims, the patent correspondence rule may decrease the effectiveness of the proposed working requirement in discouraging high-volume patenting because it may not decrease litigation risk as dramatically as the claim correspondence rule.

[216] For a definition of ex ante licensing, *see* FED. TRADE COMM'N, THE EVOLVING IP MARKETPLACE: ALIGNING PATENT NOTICE AND REMEDIES WITH COMPETITION 7-8 (2011), https://www.ftc.gov/sites/default/files/documents/reports/evolving-ip-marketplace-aligning-patent-notice-and-remedies-competition-report-federal-trade/110307patentreport.pdf [hereinafter 2011 FTC REPORT].

[217] The definition of "working" proposed in this Article includes importation in light of the uncertainty over whether "local" working requirements—which require domestic manufacture and exclude importation as a form of "working"—comply with Article 27.1 of the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights ("TRIPS"). *See* Janice M. Mueller, *The Tiger Awakens: The Tumultuous Transformation of India's Patent System and the Rise of Indian Pharmaceutical Innovation*, 68 U. PITT. L. REV. 491, 593-96 (2007) (providing overview of controversy surrounding local working requirements). Some nations include importation in the definition of "working," while others do not. *See* Paul Champ & Amir Attaran, *Patent Rights and Local Working Under the WTO TRIPS Agreement: An Analysis of the U.S.-Brazil Patent Dispute*, 27 YALE J. INT'L L. 365, 366 n.7 (2002). The Paris Convention leaves it up to each member state to define the activities that might constitute "working" the patent. G.H.C. Bodenhausen, *Guide to the Application of the Paris Convention for the Protection of Industrial Property as Revised at Stockholm in 1967*,

Whether the product or service resulting from any of the above-listed modes of "working" actually embodies an asserted claim is a determination that should be made in the same manner as ascertaining infringement—i.e., based on an element-by-element comparison with the asserted claim as construed by the court.

Notably, the proposal includes ex ante licensing as one of the activities that would qualify as "working" a patent claim. Non-practicing entities who invent but do not manufacture products (such as individual inventors, technology design firms, and universities), or operating companies that do not practice a specific patent claim themselves but instead engage in technology transfer activities, may still satisfy the working requirement through ex ante licensing, in which the transaction involves a transfer of technology and know-how to a licensee who had not already independently developed the claimed invention.[218] Where the working requirement is to be satisfied in this manner, the product or service produced by the licensee must read on each asserted claim. By contrast, the working requirement would not be satisfied by the ex post licensing of unpracticed patent claims to entities who had already developed the claimed invention independently of the patentee, whose primary contribution to the transaction would be a promise not to sue.[219]

Exceptions to the proposed working requirement would be available under limited circumstances when it would be manifestly unjust to deny the patentee remedies against an infringer. For example, a patentee may sue to stop infringement arising as a direct consequence of a business tort (e.g., the accused infringer has breached the terms of a licensing agreement or has misappropriated the patentee's technology[220]). In addition, the working requirement may be suspended during a discrete period of time when the patentee has concrete and imminent plans for commercialization but is

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at 71 (1969), http://www.wipo.int/freepublications/en/intproperty/611/wipo_pub_611.pdf.

[218] *See* 2011 FTC REPORT, *supra* note 216, at 7-8.

[219] *See id.* at 50 ("[E]x post licensing to manufacturers that sell products developed or obtained independently of the patentee can distort competition in technology markets and deter innovation."); *see also* Liivak, *supra* note 212, at 1033 n.10 (noting social benefit of channeling patentees toward ex ante licensing in connection with the "transfer of technology to those that have not yet independently invented it" as opposed to ex post licensing in the context of a promise not to sue).

[220] For example, an undercapitalized startup reveals to an investor, under a nondisclosure agreement, detailed technical information relating to its patented invention for the purpose of securing funding necessary to commercialize it. The investor subsequently divulges the technical information to another company for which he serves as a board member so as to allow that other company to introduce an infringing product on the market ahead of the startup. In such instances where the infringement has resulted from the misappropriation of the patentee's technology, the working requirement would be waived.

unable to commercialize the product due to events over which it has little or no control (e.g., delays in regulatory approval, extended disruptions in the supply-chain due to natural disasters, labor disputes affecting key suppliers, strikes affecting transportation services, etc.).

Relatedly, a grace period may be necessary to allow patentees a reasonable amount of time to commercialize their inventions.[221] The concept of a working requirement grace period is found in the Paris Convention,[222] which the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights ("TRIPS")[223] incorporates by reference in pertinent part.[224] (The United States is a signatory to both international agreements.) If the proposed working requirement were viewed as effectively imposing a royalty-free compulsory license for unpracticed claims by virtue of making them effectively unenforceable in court,[225] then the Paris Convention's grace period for compulsory licenses based on an "insufficient working" of the patent may become applicable: The working requirement would not take effect in the first three years after a patent is granted or four years from the date of filing, whichever is later.[226]

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[221] *See* Bodenhausen, *supra* note 217, at 70.

[222] Paris Convention for the Protection of Industrial Property, Mar. 20, 1883, 828 U.N.T.S. 107 (as amended on September 28, 1979).

[223] Marrakesh Agreement Establishing the World Trade Organization, Annex 1C (Trade-Related Aspects of Intellectual Property Rights), Apr. 15, 1994, 1869 U.N.T.S. 299 [hereinafter TRIPS].

[224] *Id.* at art. 2(1) ("In respect of Parts II, III and IV of this Agreement, Members shall comply with Articles 1 through 12, and Article 19, of the Paris Convention (1967).") The extent to which TRIPS may impose additional restrictions on compulsory licenses and working requirements above and beyond the Paris Convention is an unsettled issue. *See* Mueller, *supra* note 217, at 593-96. An analysis of how a working requirement, such as the one proposed in this Article, could be made fully-compliant with TRIPS is left to future research.

[225] *Cf.* Christopher A. Cotropia, *Compulsory Licensing Under TRIPS and the Supreme Court of the United States' Decision in* eBay v. MercExchange, *in* PATENT LAW AND THEORY: A HANDBOOK OF CONTEMPORARY RESEARCH 574-75 (Toshiko Takenaka ed., 2008) (analyzing how an injunction denial under the *eBay* decision may act as a de facto compulsory license).

[226] Paris Convention, *supra* note 222, art. 5A(4). The Author has not been able to find definitive guidance in the literature as to the applicability of this provision to related applications, such as continuations and divisional applications. If the grace period were to attach separately to each application filed and patent issued from a family, it is possible that, with artful claiming strategies, a patentee can effectively extend the grace period for claims covering a certain invention to encompass the entire twenty-year life of a patent family. Because related applications can thus render this provision a nullity, it may be preferable to interpret this provision as applying to only the priority application and the first patent that issues from a family.

The above-described working requirement for asserting patents in federal court may be implemented either by amending the Patent Act[227] or, alternatively, by creating decisional law that imposes a de facto working requirement. With either route, precursors exist that may guide or facilitate the implementation of the working requirement proposed in this Article.

For example, a statutory working requirement effectively exists in patent enforcement proceedings at the United States International Trade Commission ("ITC"), which is another venue in the United States where plaintiffs may file suits to enforce patents. The ITC, which is a quasi-judicial federal agency that administers trade remedy laws,[228] is authorized to investigate and block the importation of articles that infringe U.S. patents.[229] In order to initiate an ITC investigation and demonstrate entitlement to a remedy, the patentee must satisfy the ITC's statutory "domestic industry requirement," which requires a showing that it: (1) practices at least one claim of each asserted patent;[230] and (2) has made a significant investment in either manufacturing, R&D, or licensing of the invention covered by the asserted patent.[231] Because patent litigation at the ITC largely resembles district court patent litigation,[232] the ITC's caselaw interpreting and applying the domestic industry requirement, along with the experiences of the litigants in that forum, may be instructive for Congress

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[227] Currently, the Patent Act makes it clear that a patentee who files suit need not have practiced the claim that is alleged to have been infringed. *See* 35 U.S.C. § 271(d) (2010) ("No patent owner otherwise entitled to relief for infringement . . . shall be denied relief or deemed guilty of misuse or illegal extension of the patent right by reason of his having done one or more of the following: . . . (4) refused to license or use any rights to the patent. . . .").

[228] *See generally* U.S. INT'L TRADE COMM'N, http://www.usitc.gov/press_room/about_usitc.htm (last visited Sept. 19, 2015).

[229] The ITC's authority is provided under Section 337 of the Tariff Act of 1930, codified as amended at 19 U.S.C. § 1337. 19 U.S.C. § 1337(a)(1)(B) (2006).

[230] 19 U.S.C. § 1337(a)(2) (2006); Alloc, Inc. v. Int'l Trade Comm'n, 342 F.3d 1361, 1375 (Fed. Cir. 2003) ("To determine whether an industry relates to the protected articles (the 'technical prong' of the domestic industry requirement) [under 19 U.S.C. § 1337(a)(2)], the Commission examines whether the industry produces articles covered by the asserted claims."). A patentee may satisfy the technical prong of the ITC's domestic industry requirement by showing that it practices *any* claim in the asserted patent, not necessarily an asserted claim. *In the Matter of Certain Microsphere Adhesives, Process for Making Same, & Products Containing Same, Including Self-Stick Repositionable Notes*, Comm'n Opinion, USITC Inv. No. 337-TA-366, 1996 WL 1056095, *8 (Jan. 16, 1996) (holding that "claim correspondence" is not required). In contrast, the working requirement proposed in this Article is more rigorous as it would require the patentee to practice each asserted claim.

[231] 19 U.S.C. § 1337(a)(3) (2006).

[232] *See* U.S. INT'L TRADE COMM'N, SECTION 337 INVESTIGATIONS AT THE U.S. INTERNATIONAL TRADE COMMISSION: ANSWERS TO FREQUENTLY ASKED QUESTIONS, Pub. No. 4105 at 2 (Mar. 2009), http://www.usitc.gov/intellectual_property/documents/337_faqs.pdf.

(and later, the federal courts) in the event it decides to amend the Patent Act to include a working requirement of some kind, such as the one proposed in this Article.

However, given the low likelihood of action by Congress[233]—and its historical reluctance to impose an obligation on patentees to make use of their inventions[234] (except in certain limited circumstances)[235]—a more realistic option for implementing the proposed working requirement in federal court would be a de facto one that develops organically through extensions and modifications of existing caselaw. A de facto working requirement could take the form of providing substantially unfavorable treatment for unpracticed patent claims on liability issues, remedies, or both. In general, the federal courts have consistently recognized that the patentee has no obligation to practice its patent in order to bring suit against infringers.[236] However, recent scholarship analyzing the historical evidence prior to the creation of the Federal Circuit in 1982[237] reveals instances where the courts have applied certain patent law doctrines in a manner inhospitable to patentees who assert unpracticed patent claims. For example, John Duffy has argued for the revival of the "paper patent" doctrine, which would allow courts to treat unpracticed patents less favorably than practiced ones on scope and validity issues.[238] Relatedly, Samuel Ernst argues that pre-*Graver Tank*[239] precedent supports the invigoration of the reverse doctrine of equivalents as a defense against uncommercialized patents.[240] Most notably, separate analyses by Oskar Liivak and Daniel Brean reveal that Supreme Court precedent and the legislative history of the reasonable royalty statute may support limiting

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[233] *See, e.g.*, Derek Willis, *A Do-Nothing Congress? Well, Pretty Close*, N.Y. TIMES (May 28, 2014), http://www.nytimes.com/2014/05/28/upshot/a-do-nothing-congress-well-pretty-close.html?_r=0 (observing decline in number of legislative proposals introduced in Congress).

[234] *See* Marketa Trimble, *Patent Working Requirements: Historical and Comparative Perspectives*, 6 U.C. IRVINE L. REV. (forthcoming) (manuscript at 8-9 & n.21) (Feb. 4, 2016), http://ssrn.com/abstract=2727624.

[235] *See id.* at 9, n.24 (listing provisions under federal law that provide for compulsory licensing under limited circumstances).

[236] *See* Hartford-Empire Co. v. United States, 323 U.S. 386, 432 (1945) ("A patent owner is not in the position of a quasi-trustee for the public or under any obligation to see that the public acquires the free right to use the invention. He has no obligation either to use it or to grant its use to others."); *see also* Cont'l Paper Bag Co. v. E. Paper Bag Co., 210 U.S. 405, 429 (1908) (observing that "patents are property" and that "it is the privilege of any owner of property to use or not use it, without question of motive").

[237] Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, 96 Stat. 25 (1982).

[238] Duffy, *supra* note 212, at 1359.

[239] Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605 (1950).

[240] Ernst, *supra* note 212, at 1, 24, 31-32.

reasonable royalties to nominal damages if a patent is unpracticed.[241] And in recent caselaw, perhaps the most significant development that allows courts to distinguish between practiced and unpracticed patent claims is *eBay Inc. v. MercExchange LLC*[242]: A recent empirical study by Christopher Seaman reveals that, post-*eBay*, permanent injunctions are rarely granted when the patentee is either a patent assertion entity or a non-competitor.[243]

Accordingly, it is possible that remedies may be effectively denied for an unpracticed patent claim if nominal damages were awarded as "reasonable royalties" as suggested by Liivak and Brean's analysis, and an injunction were also denied based on *eBay*. If this scenario, which effectively denies relief for unpracticed claims, becomes a common occurrence, a de facto working requirement could be deemed to have been established. The previously-described limitations and exceptions[244] to the proposed working requirement may be implemented when the courts consider not only the nature of the activities that constitute "working," but also the reason for the failure to "work," when applying doctrines that are likely to yield different outcomes based on whether a patent claim is practiced.

With the working requirement proposed in this Article, the types of invention disclosures, patent applications, and patents within a portfolio that may be disfavored or later targeted for culling would most likely be those directed to: (i) products and features that have been discontinued, either because of short product lifecycles or a change in business strategy; (ii) products and features whose designs have materially changed such that they are no longer covered by their associated patents; and (iii) products and features for which the company has no foreseeable plans for commercialization. In addition, the pressure to exercise selectivity in patenting is likely to be further intensified by the thinning of the secondary market, as buyers may be unwilling to purchase patents they cannot later assert in court because they do not intend to practice them. As a result, patentees who expect to encounter difficulty unloading non-core, unpracticed, or otherwise excess patents may be inclined to adopt a more conservative patenting strategy to avoid the prospect of having to later abandon substantial numbers of unpracticed applications and patents that cannot be sold or otherwise monetized.[245]

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[241] Brean, *supra* note 212 at 868; Liivak, *supra* note 212, at 1031.

[242] 547 U.S. 388 (2006).

[243] Christopher B. Seaman, *Permanent Injunctions in Patent Litigation After* eBay*: An Empirical Study*, IOWA L. REV. (forthcoming) (manuscript at 46-49) (Dec. 21, 2015), http://ssrn.com/abstract=2632834.

[244] *See supra* notes 220-226 and accompanying text.

[245] *Cf.* Lee Anne Fennell, *Adjusting Alienability*, 122 HARV. L. REV. 1403, 1451 (2009)

In terms of industry-specific impact, the proposed working requirement for patent assertions is expected to have the strongest effect on the litigation environment—and consequently the patenting behavior—of the high-tech industry,[246] which dominates the yearly lists of the top patentees.[247] The litigation environment in which the high-tech companies operate may be characterized as a "target-rich environment" where potential accused products are often multi-component devices susceptible to holdup.[248] The opportunities for assertion (whether for strategic purposes or for monetization), on the one hand, and the perceived need for defensive patenting on the other, have thus far allowed patent *quantity* to become a matter of strategic concern for company executives, as well as an expedient performance metric for in-house counsel.[249]

For pharmaceutical companies, however, it is unclear whether a working requirement, as proposed in this Article, will materially change their litigation environment. The pharmaceutical industry, which is generally considered by scholars as an example of the patent system working as intended,[250] has a litigation environment that is unlike that of the high-tech industry: The patent suits filed by pharmaceutical companies almost always involve patents that are practiced,[251] often until expiration, because

("Foreseeing the inability to resell, a party will self-select into holding an entitlement only if she expects to be a sufficiently high-valuing user of that entitlement over time.").

[246] *Cf.* Chien, *Arms Race*, *supra* note 10, at 302-03.

[247] *See, e.g.*, *2014 IPO Top 300*, *supra* note 79; INTELLECTUAL PROPERTY OWNERS ASSOCIATION, *Top 300 Organizations Granted U.S. Patents in 2013* 1-4 (June 6, 2014), http://www.ipo.org/wp-content/uploads/2014/06/2013-Top-300-Patent-Owners_5.9.141.pdf.

[248] *See* Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 2009-10 (2007) (observing that holdup is a particular concern for multicomponent products).

[249] *See supra* Part II.B.2.

[250] *See* Dan L. Burk & Mark A. Lemley, *Biotechnology's Uncertainty Principle*, 54 CASE W. RES. L. REV. 691, 728 (2004) ("Prospect theory fits the pharmaceutical industry."); Cynthia M. Ho, *Drugged Out: How Cognitive Bias Hurts Drug Innovation*, 51 SAN DIEGO L. REV. 419, 421 (2014) ("[S]cholars who focus on patent theory frequently hail the pharmaceutical industry as an example of how patents work as intended." (citation omitted)). *See also* ROBERT P. MERGES, JUSTIFYING INTELLECTUAL PROPERTY 282 (Harvard Univ. Press 2011) ("If there is one industry where the conventional 'incentive theory' of patents is actually true, it is the pharmaceutical industry.").

[251] Using the Lex Machina database, at https://lexmachina.com, the Author collected a random sample of the complaints from 100 pharmaceutical patent cases filed in 2014, where at least one of the plaintiffs was a pharmaceutical company. Only one instance of a specific plaintiff defendant combination was counted, in order to avoid counting multiple instances of the same (or nearly identical) case that were filed in different district courts. Of the 100 cases, 98 involved the assertion of a patent that covered an existing product manufactured by either the patentee itself (including subsidiaries) or an exclusive licensee. In the remaining two cases, the plaintiff was actively developing a product that would be covered by the

they are seeking to bar the market entry of generics.[252] Indeed, if patent protection is unlikely to be available for a specific drug (e.g., because of prior art issues), then development efforts for that product may be halted.[253] In effect, the pharmaceutical companies already behave as if there were a de facto working requirement for filing patent suits.

C. Potential Concerns and Objections

Given that only about 2% of patents are litigated,[254] some may question whether a change in the litigation environment through the addition of a working requirement would have a meaningful impact on a firm's patenting strategy. In practice, the prospect of an adverse litigation event, even one that has a remote possibility of occurring, can profoundly shape corporate policy that governs day-to-day patenting behavior. An example of this is the companies' reactions to willfulness issues, where the likelihood that any given patent will be asserted is low, the further likelihood of an infringement finding is even lower, and the cumulative likelihood that damages will be trebled is lower still. However remote, the possibility of treble damages underlies the widely-adopted corporate policy that forbids employees from conducting prior art searches on their own and reviewing external patents.[255] Similarly, for a random patent in a large portfolio, the

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asserted patent. In 61% of the cases, the plaintiff was a pharmaceutical company that both owned and practiced the asserted patent. In 21% of the cases, the patentee was a pharmaceutical company, but another pharmaceutical company practiced the patent as an exclusive licensee. In the remaining 15% of the cases, the patentee was not a pharmaceutical company (e.g., a university), but the patent was exclusively licensed to a pharmaceutical company that practiced it. A spreadsheet listing the 100 complaints is on file with the author.

[252] Pharmaceutical patent litigation is most often brought under the Hatch-Waxman Act, 35 U.S.C. §271(e)(2) (2010), in response to a generic manufacturer's filing of an Abbreviated New Drug Application with the Food & Drug Administration in order to introduce a generic version of the patentee's drug.

[253] *See* Benjamin N. Roin, *Unpatentable Drugs and the Standards of Patentability*, 87 TEX. L. REV. 503, 545-47 (2009).

[254] Lemley, *Rational Ignorance*, *supra* note 21, at 1501.

[255] *See, e.g., Patent Quality Improvement: Hearing Before the Subcomm. on Courts, the Internet, and Intellectual Property of the House Comm. on the Judiciary*, 108th Cong. 23 (July 24, 2003) (testimony of David M. Simon, Chief Patent Counsel, Intel Corporation) ("[M]any companies forbid their engineers from studying third party patents to avoid the charge of willful infringement."); Mark A. Lemley & Ragesh K. Tangri, *Ending Patent Law's Willfulness Game*, 18 BERKELEY TECH. L.J. 1085, 1100-01 (2003) ("[I]n-house patent counsel and many outside lawyers regularly advise their clients not to read patents if there is any way to avoid it."); Edwin H. Taylor & Glenn E. Von Tersch, *A Proposal to Shore Up the Foundations of Patent Law that the Underwater Line Eroded*, 20 HASTINGS COMM. & ENT. L.J. 721, 737 (1998) ("As matters now stand many companies discourage employees

likelihood of an inequitable conduct finding is remote. Nevertheless, the prospect of having a patent held unenforceable due to an inequitable conduct finding prompts patent attorneys to systematically and routinely flood the PTO with prior art references as a matter of standard procedure for each application (which the in-house counsel willingly pays for as a prosecution expense).[256] Accordingly, the possibility of being effectively denied infringement remedies for an unpracticed claim is likely to induce firms to adopt patent portfolio management practices that prioritize the filing and maintenance of claims and patents that are likely to satisfy the proposed working requirement. The expected decrease in patenting activity will likely be driven in substantial part by companies concerned about the expense of maintaining a non-trivial number of patents in their portfolio that cannot be readily asserted or easily sold (because a buyer who acquires a patent would need to satisfy the working requirement in order to assert it later).[257]

Another potential concern is that patentees might "inefficiently engage in commercialization simply to meet the [working] requirement."[258] In analyzing inefficient commercialization, it may be helpful to evaluate it with reference to the frequency of its likely occurrence, as well as the net impact on the social welfare.

With respect to the frequency of occurrence, inefficient commercialization is unlikely to be common. For company executives to overcome short-termism[259] and commit the resources necessary[260] to engage in inefficient commercialization for the sole purpose of satisfying the proposed working requirement, the likelihood of victory and the potential payoff from bringing a patent suit would need to be substantial. Because

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from reading patents. This presumably lessens the chance that the company will be found to have knowledge of a patent.").

[256] Therasense, Inc. v. Becton, Dickinson & Co., 649 F.3d 1276, 1289 (Fed. Cir. 2011) ("With inequitable conduct casting the shadow of a hangman's noose, it is unsurprising that patent prosecutors regularly bury PTO examiners with a deluge of prior art references, most of which have marginal value.").

[257] *See* Fennell, *supra* note 245 and accompanying text.

[258] Abramowicz & Duffy, *supra* note 121, at 1645.

[259] According to one definition, short-termism is "an excessive focus on short-term results at the expense of long-term interests." FINANCIAL TIMES, http://lexicon.ft.com/Term?term=short_termism (last visited Mar. 9, 2016). For a brief overview of short-termism, see Eilene Zimmerman, *The Risks and Rewards of Short-Termism*, N.Y. TIMES (Nov. 4, 2015), http://nyti.ms/1Rw84la.

[260] Commercialization requires the coordination of multiple departments within a company—such as marketing, engineering, sales, and manufacturing. *See* Robert F. Brands, *8 Step Process Perfects New Product Development*, HUFFINGTONPOST (Jan. 7, 2014, 4:34 PM), http://www.huffingtonpost.com/robert-f-brands/8-step-new-product-development_b_4556363.html.

patent litigation is notoriously expensive[261] and unpredictable, the "business case" for engaging in inefficient commercialization may be difficult to make in most circumstances. Even if company executives were to authorize it, inefficient commercialization may encounter formidable logistical barriers, given intra-firm coordination problems and the self-interest of the agents in the various departments within a company—such as marketing, sales, manufacturing, and management—who might actively (or indirectly) resist it or deprioritize it, lest it interferes with their ability to maximize their own performance metrics related to revenue generation and operational efficiency.[262]

Separate and apart from the logistical difficulties of inefficient commercialization is the concern about the net impact on social welfare if a company were to either engage in it (thereby potentially incurring considerable costs) or not (thereby allowing an unpracticed patent to be freely used by competitors). In analyzing this concern, consider the following scenario: Company X develops two drugs, Drug #1 and Drug #2, to treat the same disease and obtains patents on both, but brings to market only Drug #1. For this scenario, some may object to the proposed working requirement on the ground that, in the event a competitor later develops and markets Drug #2, Company X would need to commercialize Drug #2 in order to effectively assert its "Drug #2 patent" to protect its sales of Drug #1. For Company X, the commercialization of Drug #2 would be highly inefficient and potentially wasteful, especially if it had shelved the development of that drug at an early stage. If Company X elects to not engage in inefficient commercialization, then Drug #1 would encounter competition from Drug #2, which might be disadvantageous to Company X's bottom line. At the same time, however, the public benefits by having two options for treatment instead of one, with potentially lower prices.

Whether the net impact on social welfare may be ultimately positive or negative in scenarios like the one described above may depend on, among other things: a comparison of Drug #1 with Drug #2; the reason for Drug #2's non-commercialization by Company X; the reason why Company X obtained a patent on Drug #2; and whether Company X (or the competitor) is a large, established company or a new entrant. If, for example, Drug #2 were just as effective as Drug #1, and Company X's reasons for non-commercialization were solely due to a lack of resources for bringing both

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[261] *See 2013 AIPLA Survey Summary*, *supra* note 143, at 34 (reporting median litigation costs in 2013 of $5.5 million for patent suits with more than $25 million at risk).

[262] Companies routinely pare underperforming products to boost profits. *See* Stephanie Thompson, *400 Fewer Products: General Mills to Pare its Portfolio*, ADVERTISING AGE (July 5, 2004), http://adage.com/article/news/400-fewer-products-general-mills-pare-portfolio/99754/.

products to market, it is possible that the net social utility of the proposed working requirement might be neutral or even negative if Company X were a new entrant and the competitor were a large company. If, however, Drug #2 were a predictable improvement on a competitor's flagship product that was highly likely to be made by the competitor, the net social utility of the proposed working requirement may be positive if Company X had absolutely no intention of ever commercializing Drug #2 and had patented it with the sole intention of suing the competitor to protect its sales of Drug #1 from any improved versions of the competitor's product.[263] In this latter scenario, the net social utility of the proposed working requirement would further increase if Drug #2 were also superior to and cheaper than Drug #1, and the prospect of inefficient commercialization would discourage Company X from asserting its patent against Drug #2. Similarly, if the competitor producing Drug #2 were a startup whereas Company X is a large, established company that is concerned about maintaining its market dominance, the proposed working requirement could dissuade Company X from using its vast portfolio of unpracticed patents to engage in "patent bullying."[264] More generally, the proposed working requirement may disincentivize, or at least hinder, the assertion of a patentee's unpracticed patents to suppress the social-welfare-enhancing commercialization of alternative technologies.[265]

In most cases, Drug #2 is likely to be a product that was abandoned or shelved during the product development stage because it was in some way less attractive than Drug #1 for Company X. The fact that patents are obtained for inventions that are never commercialized is a common occurrence that is largely an artifact of the patent harvesting and portfolio management process[266] that systematically sweeps up inventions that are

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[263] This is not a purely theoretical concern. When the Author worked as a patent prosecutor in private practice, some of his clients gave him the product literature and marketing materials of a competitor and asked him to prepare patent applications directed to improvements that a competitor was highly likely to introduce in the next version of its products, in order to "box in" the competitor and to prevent it from later introducing an improvement to its own products in the market.

[264] *See* Ted Sichelman, *The Vonage Trilogy: A Case in "Patent Bullying"*, 90 NOTRE DAME L. REV. 543, 549-50 (2014) ("[P]atent bullies assert their patents against entrants to prevent innovative, disruptive technologies from competing with the bullies' outmoded products.").

[265] Examples of patented technologies alleged to have been suppressed or withheld from the market by the patentee include: artificial caviar, photocopiers, air pollution control devices for cars, "safer" cigarettes, and erythropoietin. Kurt M. Saunders, *Patent Nonuse and the Role of Public Interest as a Deterrent to Technology Suppression*, 15 HARV. J. L. & TECH. 389, 392-96 (2002).

[266] *See supra* Part II.B.1-2.

inchoate or speculative, where patentees "file first and ask questions later."[267] When the fact that so many patents are unpracticed[268] is combined with the reality that product development and commercialization is risky and resource-intensive, the social utility of the proposed working requirement may be, on the whole, a net positive for operating (i.e., product-producing) companies if they have more to fear from—and are harmed more often by—the assertion of a vast universe of unpracticed patents against their products, rather than the prospect of being unable to fully shield themselves from competition from products they elected not to bring to market.

Another concern is that the proposed working requirement might have a disproportionally negative impact on startups and small businesses, as they have limited resources for commercializing their inventions. Although the large, well-capitalized companies might have more resources for commercialization, the proposed working requirement is expected (and intended) to have a disproportionate impact on their portfolios, which likely contain a large percentage of unpracticed patents for which there are no plans for commercialization. Startups, by virtue of having limited resources to spend on patent procurement,[269] are more likely to have small portfolios in which a substantial proportion of patents cover either existing products or products that are likely to be commercialized. For these latter patents that cover inventions that have not yet been commercialized, but for which plans to do so exist, the exceptions to the working requirement and the grace periods could be tailored to substantially mitigate the harshness of the proposed working requirement.[270] In some cases, the working requirement might have no material impact at all: According to a 2008 survey of startups, "patents provide mixed to relatively weak incentives for core innovative activities, such as invention, development, and commercialization,"[271] such that "a large share of startups, especially in the software industry, opt out of patenting altogether."[272]

Finally, some may object to the proposal on the ground that restricting the ability of patentees to file suit may devalue patents, which, along with a decrease in patenting activity, may adversely impact R&D and innovation. Except for the pharmaceutical industry, however, studies suggest that the

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[267] *See* Cotropia, *Early Filing*, *supra* note 8, at 69.

[268] *See* Lemley, *supra* note 21, at 1507 ("[T]he total number of patents litigated or licensed for a royalty (as opposed to a cross license) is on the order of five percent of issued patents.").

[269] *See* Graham et al., *supra* note 73, at 1310.

[270] *See supra* notes 220-226 and accompanying text.

[271] Graham et al., *supra* note 73, at 1325.

[272] *Id.*

causal link between innovation and patents under the current regime may be, at best, inconclusive.[273] Because the patent harvesting process and the associated patent portfolio management techniques at many companies provide the patentees' agents with an artificial incentive to patent, patents may be largely a *byproduct* of R&D in many cases, rather than a causative influence.[274] To the extent that the proposal in this Article will devalue patents, the devaluation will likely occur primarily in those circumstances and industries where the bulk of the patents are being procured for purposes that are largely orthogonal to R&D and the commercialization of inventions.

IV. CONCLUSION

Major distortionary influences in the patent system—such as poor patent quality, patent thickets, anticommons, and patent assertion entities—may be traced to the generation, examination, and management of an ever-increasing volume of patent applications and patents. The patent system has difficulties coping with its sheer scale. It has, in other words, a quantity problem. This Article suggests that one possible reform may be to adopt rules that induce high-volume patentees to exercise greater selectivity in their patenting decisions. An analysis of the two-sided agency problem in patent prosecution suggests that behavioral changes might be effected by changing the litigation environment in which the patentees' agents operate. To this end, one suggested reform is to implement a working requirement for asserting patents in federal court, where, with limited exceptions, each patent claim that is asserted against an accused infringer must have been or will be practiced by the patentee during the period for which remedies are sought. This is expected to increase the selectivity of portfolio management decisions by prompting patentees to focus on those patents that cover key inventions that both it and the accused infringer are likely to practice, while, at the same time, decreasing the need for large-scale defensive patenting as

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[273] *See, e.g.*, Paul J. Heald, *A Transaction Costs Theory of Patent Law*, 66 OHIO ST. L.J. 473, 474 (2005) (summarizing literature); Hall & Ziedonis, *supra* note 139, at 102 ("R&D managers in semiconductors consistently reported that patents were among the least effective mechanisms for appropriating returns to R&D investments. . . . Nonetheless, the number of semiconductor-related patents issued in the United States has risen sharply since the early 1980s. . . ."); Edwin Mansfield, *Patents and Innovation: An Empirical Study*, 32 MGMT. SCI. 173, 180 (1986) (reporting results of empirical study based on data obtained from 100 U.S. manufacturing firms, and concluding that "[d]espite the fact that the patent system generally is defended at least partly on the grounds that it increases the rate of innovation, the present study indicates that its effects in this regard are very small in most of the industries we studied").

[274] *See supra* Part II.B.

well as shrinking the patent secondary market from which patent assertion entities source the patents they assert.

In the absence of empirical studies that test the underlying assumptions and the theorized reactions to the working requirement, this proposal is necessarily tentative. However, this does not affect the ultimate conclusion regarding the need for greater patenting selectivity, which future research may explore other ways of achieving.

Unwinding Non-Native Control Over Native America's Past: A Statistical Analysis of the Decisions to Return Native American Human Remains and Funerary Objects under the Native American Graves Protection and Repatriation Act, 1992–2013

Jason Corcoran Roberts*

I. INTRODUCTION

The Native American Graves Protection and Repatriation Act[1] (NAGPRA or the Act), which notched its twenty-fifth anniversary in 2015, is one of the most important human rights laws in the United States. The hard-fought legislation[2] enshrines the fundamental right of Native Americans to control their ancestral dead, funerary objects, sacred objects, and objects of cultural patrimony. Its 1990 enactment initiated an abrupt break from the prior emphasis of preserving human remains and cultural items for scientific study, requiring federal agencies and museums to: review their collections; consult Native people; and repatriate culturally affiliated remains as well as their associated funerary objects.

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* Jason Corcoran Roberts is a Foreign Service Officer with the U.S. Department of State. Mr. Roberts previously practiced Native American law with the U.S. Department of the Interior, 2001-2010. He also coordinated the National Park Service's NAGPRA compliance and assisted the government study of the "Kennewick Man" human remains and the subsequent cultural affiliation decision, 1999-2001. Mr. Roberts received his J.D. and M.A. in Anthropology from the University of Tulsa and his B.A. in Anthropology from the University of Kansas. The views presented in this article are solely those of the author and do not necessarily represent the position of the U.S. government. Due to publication limitations, the supporting data is available on the author's website at http://www.nagpra-unwinding.com. The author thanks his wife, Heidi N. Gómez, and C. Timothy McKeown, Ph.D. for their insightful comments and suggestions.

[1] Pub. L. No. 101-601, 104 Stat. 3048 (1990) (codified at 25 U.S.C. §§ 3001-3013 (2006) and 18 U.S.C. § 1170 (2006); *see also* Native American Graves Protection and Repatriation Act Regulations, 43 C.F.R. § 10 (2010).

[2] For a comprehensive legislative history of NAGPRA see C. TIMOTHY MCKEOWN, IN THE SMALLER SCOPE OF CONSCIENCE: THE STRUGGLE FOR NATIONAL REPATRIATION LEGISLATION, 1986-1990 (2012).

As demonstrated by the return of the "Kennewick Man" case to national headlines, NAGPRA and the repatriation of Native American human remains, particularly ancient remains, continue to be controversial.[3] Given this ongoing tension and NAGPRA's quarter-century of implementation, the time is ripe to examine the federal agency and museum repatriation decisions and assess the Act's effectiveness. This paper attempts to do so by collecting and synthesizing baseline cultural affiliation data, identifying patterns, evaluating compliance, addressing criticisms, and analyzing the decision-making institutions' choices as well as interactions with Native Americans. The result is the first comprehensive statistical analysis of federal agency and museum decisions to transfer human remains and funerary objects to Native Americans.

The grist for this study is the 1,610 NAGPRA Notices of Inventory Completion ("Inventory Notice") federal agencies and museums published in the *Federal Register from 1992–2013* that transferred over 48,000 sets of human remains and one million funerary objects to Native American control.[4] Of these Inventory Notices, 1,476 repatriation decisions identified the cultural affiliation of 43,799 remains and 1,165,838 funerary objects, while 190 disposition decisions determined 4,964 remains and 8,363 funerary objects were culturally unidentifiable but could be transferred to Native American claimants. This paper focused on the effect the following "repatriation variables" had on the number of identified Native American cultural affiliates: 1) human remains; 2) funerary objects; 3) consultants; and 4) evidence types (archaeological, biological, geographic, oral tradition, etc.). The key finding suggests the number of consultants engaged in the cultural affiliation decision process is the primary contributor to determining the number of cultural affiliates. Federal agencies and museums also were found to have implemented NAGPRA differently with respect to their use of consultants and evidence types, but both ultimately arrived at similar figures for determining the number of cultural affiliates. Although agencies and museums culturally affiliated remains from all the chronological periods (14,000 B.C.–1950 A.D.) and geographic regions of the United States, most derive from the A.D. timeframe (1 A.D.–1950

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[3] *See* Bonnichsen v. United States, 217 F. Supp. 2d 1116 (D. Or. 2001), *aff'd* 357 F.3d 962 (9th Cir. 2004).

[4] *See* 43 C.F.R. § 10.9 (e) (A published Inventory Notice is not confirmation that a physical transfer of the human remains and funerary objects occurred. Rather, it records federal agency and museum repatriation (a cultural affiliation decision) or disposition decisions (a culturally unidentifiable decision) and clears the way for the remains and funerary objects at issue to be transferred following a thirty day waiting period. At present, the Native American Graves Protection and Repatriation Act ("NAGPRA" or the "Act") does not include a mechanism for memorializing an actual physical transaction.).

A.D.) and originate from western states.[5] In contrast to the human remains included in the repatriation and disposition decisions, approximately 131,476 Native American human remains have been classified as culturally unidentifiable and continue to be retained in federal agency and museum collections at the time of this writing.[6]

In its concluding remarks, this paper proposes using the evidence type, chronology, and provenance data from the published affiliation decisions to reassess the status of the culturally unidentifiable remains still held in collections, which agencies and museums initially determined were not related to present-day Native Americans. This paper argues that comparing temporal and geographic information from the culturally affiliated human remains with similar data from culturally unidentifiable remains will assist agencies and museums identify prospective Native consultants. Engaging these consultants in conjunction with the corresponding affiliation decision evidence might switch many of the unidentifiable remains in collections to affiliated status and clear a path for their repatriation or at least provide sufficient evidence for their disposition under NAGPRA despite not meeting the cultural affiliation standard.

II. AN UNWINDING

Enacted on November 16, 1990, NAGPRA is transformative federal legislation that recognizes the authority of Native Americans to control and protect ancestral human remains and associated and unassociated funerary objects, sacred objects and objects of cultural patrimony (cultural items).[7]

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[5] *See infra* Table 11.

[6] *See National NAGPRA Online Databases*, NAT'L PARK SERV., http://www.nps.gov/nagpra/ONLINEDB/index.htm.

[7] The Act is part of a broader national and international indigenous burial rights and repatriation trend. Most U.S. states have adopted NAGPRA-like legislation and, in some instances, more expansive protective measures. *See* Ryan M. Seidemann, *NAGPRA at 20: What Have the States Done to Expand Human Remains Protections?*, 33 MUSEUM ANTHROPOLOGY 199 (2010); *see also* MARCUS H. PRICE, III, DISPUTING THE DEAD: US LAW ON ABORIGINAL REMAINS AND GRAVE GOODS 122-25(1991) (noting that almost 40 states had varying degrees of repatriation legislation in place prior to NAGPRA). Similarly, certain countries and international museums are increasingly taking steps to repatriate indigenous human remains as well as developing transparent guidelines governing the collection and display of these sensitive cultural materials. *See* Doreen Carvajal, *Museums Confront the Skeletons in Their Closets*, N.Y. TIMES, Mar. 24, 2013, at C1; *see also* Honor Keeler, *Indigenous International Repatriation*, 44 ARIZ. ST. L.J. 703, 745-765 (2012). While the Act only applies to U.S. federal agencies and museums, it may extend its jurisdictional reach internationally to Native American human remains and the defined cultural items that were removed from federal lands. *See* 25 U.S.C. § 3002(a). Between 1992-2013, this type of international NAGPRA repatriation has only occurred twice: 1) the Bureau of Land

At its heart, NAGPRA recognizes Indigenous sovereignty and it is consistent with the groundbreaking Indian Reorganization Act of 1934[8] (which strengthened self-government and halted the erosion of tribal lands) and the Indian Self-Determination and Education Assistance Act of 1975[9] (which authorized Indian tribes to administer federal Indian programs), in that the Act reversed longstanding policies of non-Native governance over Native resources.[10] In this case, NAGPRA provided—or more appropriately returned—to Native Americans enforceable rights and decision-making authority over their past.

Management ("BLM"), Alaska State Office decision in Notice of Inventory Completion for Native American Human Remains and Associated Funerary Objects from Gambell, AK, in the Control of the Alaska State Office, Bureau of Land Management, Anchorage, AK, 61 Fed. Reg. 46,663 (Sept. 4, 1996) (involving 294 human remains and 556 associated funerary objects dating from 300 A.D. to 1879 A.D. removed from BLM managed land, some of which were sent to the University of Bern, Switzerland, in the 1970s for studies); and 2) the Chugach National Forest, United States Forest Service, Anchorage, AK, decision in Notice of Inventory Completion for Native American Human Remains from Prince William Sound, AK, in the Control of the Chugach National Forest, United States Forest Service, Anchorage, AK, 62 Fed. Reg. 42,261 (Aug. 6, 1997) (involving 24 human remains dating from 1000 A.D. to 1499 A.D. removed from Forest Service managed land and sent to the National Museum in Denmark in the 1930s). For further discussion, see NAT'L PARK SERV., http://www.nps.gov/NAGPRA/SPECIAL/International.htm.

[8] Wheeler-Howard Act (Indian New Deal), ch. 576, 48 Stat. 984 (1934) (codified as amended at 25 U.S.C. §§ 461-478. Furthermore, Congress amended the National Historic Preservation Act in 1992 to enable federally recognized Indian Tribes to assume responsibility for preserving historic properties on tribal lands. *See* National Historic Preservation Act of 1966, Pub L. No. 89-665; 80 Stat. 915 (codified as amended at 54 U.S.C. §§ 300101-307108 (2012)). To date, 140 Tribes manage historic preservation programs on their lands. *See* NAT'L PARK SERV., *Tribal Historic Preservation Program*, http://www.nps.gov/thpo/.

[9] NAGPRA is consistent with the U.S. policy of relinquishing management over tribal services and resources to Indian Tribes. *See* Indian Self-Determination Act of 1975, 25 U.S.C. §§ 450-450g (2012).

[10] NAGPRA incorporates several fields of law, including administrative, criminal, cultural resource, human rights, and property. Additionally, NAGPRA is Indian law and the canons of construction are to be applied to resolve any textual ambiguities. *See* Yankton Sioux Tribe v. U.S. Army Corps of Eng'rs., 83 F. Supp 2d 1047, 1061 (D.S.D. 2000) (affirming NAGPRA is Indian law). The Indian law canons of construction provide, *inter alia*, "(1) ambiguities in a Federal statute must be resolved in favor of Indians . . . and (2) a clear expression of Congressional intent is necessary before a court may construe a Federal statute so as to impair tribal sovereignty." *See* San Manuel Indian Bingo & Casino v. NLRB, 475 F.3d 1306, 1311 (D.C. Cir. 2007). The Act also explicitly acknowledges tribal sovereignty and the government-to-government relationship between the United States and Indian tribes as well as the unique relationship with Hawaiian organizations. *See* 25 U.S.C. § 3010 (2006).

Potent legislation, NAGPRA protects burial sites, prohibits the sale of human remains and other cultural items, and requires comprehensive consultation with Native Americans. The Act also created a process to disclose the nature of federal agency and museum collections and repatriate human remains and cultural items to affiliated Indian tribes, Native Hawaiian organizations, and lineal descendants. Furthermore, NAGPRA addresses the disposition of unclaimed and culturally unidentifiable human remains and cultural items, which apply to new discoveries (intentional and inadvertent) on federal and tribal lands as well as to institution collections.

In addition to safeguarding Native burial rights, NAGPRA profoundly changed the practice of U.S. anthropology.[11] It altered how Native American material culture is managed and, in particular, the treatment and control of the Native dead and their possessions.[12] Prior to NAGPRA, cultural resource laws focused on preservation and scientific study with little to no formal role for Native people. Upending these practices, NAGPRA incorporated Native interests—including mandated consultation, a low cultural affiliation standard,[13] and equal treatment of oral tradition (native traditional knowledge)[14] evidence—directly into the oversight of Native heritage.

NAGPRA's unwinding of non-Native control over the Native American past continues to be controversial, with the repatriation and disposition of

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[11] *See* Larry J. Zimmerman, *Multivocality, Descendant Communities, and Some Epistemological Shifts Forced by Repatriation, in* OPENING ARCHAEOLOGY 91 (Thomas Killion ed., School for Advanced Research Press 2007)("The most profound impact of repatriation on anthropology has been that it has pushed anthropology, but especially archaeology, away from scientific colonialism."). *See also* Sara L. Gonzalez & Ora Marek-Martinez, *NAGPRA and the Next Generation of Collaboration*, in 15 SAA ARCHAEOLOGICAL REC. 1, at 11-13 (2015).

[12] *See* David Hurst Thomas, *Finders Keepers and Deep American History: Some Lessons in Dispute Resolution, in* IMPERIALISM, ART AND RESTITUTION 218, 218-220, 243-251 (John Henry Merryman ed., 2006); *see also*, Jack F. Trope & Walter R. Echo-Hawk, *The Native American Graves Protection and Repatriation Act: Background and Legislative History, in* REPATRIATION READER: WHO OWNS AMERICAN INDIAN REMAINS 123, 124-29, 141-51 (Devon A. Mihesuah ed., 2000); Stephen E. Nash & Chip Colwell-Chanthaphonh, *Editorial to NAGPRA After Two Decades*, 33 MUSEUM ANTHROPOLOGY 99-104 (2010).

[13] Cultural affiliation pursuant to NAGPRA "means that there is a *relationship* of shared group identity which can be reasonably traced historically or prehistorically between a present day Indian tribe or Native Hawaiian organization and an identifiable earlier group." 25 U.S.C. §3001(2) (emphasis added). Including "relationship" in this definition indicates a rigid, higher standard finding of a one-to-one unbroken link between the present day native entity and the earlier group is not required. *See* Matthew Liebmann, *Postcolonial Cultural Affiliation: Essentialism, Hybridity, and NAGPRA, in* ARCHAEOLOGY AND THE POSTCOLONIAL CRITIQUE 73, 81-83 (Matthew Liebmann et al. eds., 2008)

[14] *See* Zimmerman, *supra* note 11, at 100 ("Congress's intent was to equate Native traditional knowledge with scientifically generated information").

human remains and cultural items of great antiquity receiving the most scrutiny.[15] Indeed, the highly contested *Bonnichsen* or "Kennewick Man" (called the "Ancient One" by Native Americans) case might return to litigation following new DNA studies of the ancient human remains. The *Bonnichsen* court essentially determined the approximately 9,000-year-old skeleton from Washington State is not "Native American" under NAGPRA and is not subject to the Act because the defendant U.S. Army Corps of Engineers had insufficient evidence linking it to present-day Native Americans.[16] Subsequently, the plaintiff anthropologists studied the remains and published a book of their findings in late 2014, which asserted the Kennewick Man is not Native American based on a craniometric (cranial measurement) analysis.[17] Shortly thereafter, a contrary DNA based analysis published in June 2015 found the Kennewick Man is Native American and is most closely related to the Confederated Tribes of the Colville Reservation, one of the five Indian tribes claiming the remains under NAGPRA. The DNA study also asserted the craniometric analysis of the Kennewick remains is not reliable for determining its affiliation to contemporary people.[18] On April 27, 2016, almost a year later, the U.S. Army Corps of Engineers determined the Kennewick Man is related to

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[15] *See generally* Sara L. Gonzalez, *supra* note 11; Ora Marek-Martinez, *NAGPRA and the Next Generation of Collaboration*, 15 SAA ARCHAEOLOGICAL REC. 11, 11-13 (2015); Matthew Liebmann, *Postcolonial Cultural Affiliation: Essentialism, Hybridity, and NAGPRA*, *in* ARCHAEOLOGY AND THE POSTCOLONIAL CRITIQUE 73, 73-90 (Matthew Liebmann et al. eds., 2008). For an explanation of using oral tradition under NAGPRA, *see* Roger C. Echo-Hawk, *Ancient History in the New World: Integrating Oral Traditions and the Archaeological Record in Deep Time*, AM. ANTIQUITY, Apr.-Jun. 2000, at 267, 267-290.

[16] *See* Bonnichsen v. United States, 217 F. Supp. 2d. 1138 (D. Or. 2001), *aff'd*, 357 F.3d 962 (9th Cir. 2004). In another controversy involving ancient Native American human remains, the U.S. Supreme Court on Jan. 25, 2016 declined a request by three anthropologists to review a Ninth Circuit decision that tribal sovereign immunity precluded their alleged right to study two approximately 9,000-year-old skeletons brought against the University of California, San Diego. See, White v. University of California, 792 F.3d 1103 (9th Cir. 2014). The Ninth Circuit concluded the Indian tribes the University decided to give the remains to were required parties under the Federal Rule of Civil Procedure 19 and NAGPRA did not abrogate their tribal sovereign immunity. Id. See also, 76 Fed. Reg. 75908 (Dec. 5, 2011) (the University's Inventory Notice transferring the two sets of remains and 25 funerary objects to the La Posta Band of Diegueno Mission Indians of the La Posta Indian Reservation, California, which also represented eleven other Indian tribes). Thus, the tribes were found to be indispensable to the anthropologists' NAGPRA suit against the University, but their tribal immunity prevented them from being forcibly joined.

[17] *See* DOUGLAS W. OWSLEY, KENNEWICK MAN: THE SCIENTIFIC INVESTIGATION OF AN ANCIENT SKELETON (Douglas W. Owsley et al. eds., Texas A&M Univ. Press, 2014).

[18] *See* Morten Rassumen et al., *The Ancestry and Affiliations of Kennewick Man*, NATURE (June 18, 2015), http://www.nature.com/nature/journal/vnfv/ncurrent/full/nature14625.html.

modern Native Americans from the United States and are "Native American" under NAGAPRA. The Corps based its re-examined decision on the June 2015 DNA findings and a second University of Chicago study it commissioned to validate these results, which ultimately confirmed the Kennewick Man remains are genetically closer to modern Native Americans than any other population.[19] If the Corps' Native American decision stands, the Kennewick Man remains will be subject to NAGPRA.

As the Act grinds forward, several compliance-related claims challenging the scope of NAGPRA have emerged. Variations of the following, often contradictory, assertions are common: 1) cultural affiliation decisions are not sufficiently thorough;[20] 2) affiliation standards are heightened to undermine repatriation;[21] 3) decisions with multiple cultural affiliate are excessive;[22] 4) institutions thwart the Act by unjustifiably deciding human remains are culturally unidentifiable;[23] 5) oral tradition is used without

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[19] See, Corps determines Kennewick Man is Native American, http://www.nwd.usace.army.mil/Media/NewsReleases/tabid/1989/Article/742935/corps-determines-kennewick-man-is-native-american.aspx

[20] *See* Stephen Ousley, *Comments on Schillaci & Bustard*, 33 PoLAR POL. & LEGAL ANTHROPOLOGY REV. 374, 374 (Nov. 2010). In response to *Controversy and Conflict: NAGPRA and the Role of Biological Anthropology in Determining Cultural Affiliation*, 33 PoLAR POL. & LEGAL ANTHROPOLOGY REV. 352 (Nov. 2010), Ousley noted evidentiary concerns with NAGPRA decisions, stating the "vast majority of the repatriation notices published in the Federal Register have virtually no information as to what specific evidence was evaluated." Ousley, *supra*, at 374; *see also*, Linda S. Cordell & Keith W. Kintigh, *Reply to Schillaci & Bustard.*, 33 PoLAR POL. & LEGAL ANTHROPOLOGY REV. 378, 378 (Nov. 2010) (expressing concerns over the application of evidence, interpretation of cultural affiliation, and overly broad use of multiple cultural affiliates); ELIZABETH WEISS, REBURYING THE PAST: THE EFFECTS OF REPATRIATION AND REBURIAL ON SCIENTIFIC INQUIRY 43 (2008) ("NAGPRA has been expanding and the determinations of what should be repatriated are becoming looser.").

[21] *See* James Riding In, *Introduction: Human Rights and the American Indian Repatriation Movement: A Manifesto*, 44 ARIZ. ST. L.J. 613, 621-622 (2012).

[22] *See* Letter from Keith W. Kintigh, President, Society for American Archaeology, to Bruce Babbitt, Secretary of the Interior (Apr. 13, 1999), http://saa.org/AbouttheSociety/GovernmentAffairs/RepatriationIssues/CriticalIssuesNAGPRA033104/tabid/220/Default.aspx.

[23] *See Finding Our Way Home: Achieving the Policy Goals of NAGPRA: Hearing Before the S. Comm. on Indian Affairs*, 112th Cong. 47-50 (2011)(statement of Mark Macarro, Chairman, Pechanga Band of Luiseno Indians)(noting that "there are issues with how the term 'culturally affiliated' is being interpreted; how 'culturally unidentifiable' is being used to avoid return of remains and cultural items; how science is valued more than tribal knowledge."); Clayton W. Dumont, Jr., *Contesting Scientists' Narrations of NAGPRA's Legislative History: Rule 10.11 and the Recovery of "Culturally Unidentifiable" Ancestors*, 26 WICAZO SA REV. 1, 5-41 (2011)("[A] great many of our ancestors have been unilaterally labeled 'culturally unidentifiable' by scientists."); *see also* Dylan Brown, *The Spoils of Wars and Massacres: NAGPRA 25 Years Later*, INDIAN

supporting scientific evidence;[24] 6) oral tradition evidence is ignored while scientific evidence is promoted;[25] 7) cultural affiliation decisions are made without Native consultation;[26] 8) ancient human remains are not subject to repatriation and disposition under the Act;[27] and 9) institutions make cultural affiliation decisions inconsistent with the law.[28]

COUNTRY TODAY MEDIA NETWORK (June 9, 2015), http://indiancountrytodaymedianetwork.com/print/2015/06/09/spoils-wars-and-massacres-nagpra-25-years-later-160606.

[24] *See* Elizabeth Weiss, *The Bone Battle: The Attack on Scientific Freedom*, LIBERTY 39, 40 (2009)("One cannot know for certain how many reburials resulted from oral-traditional evidence, as opposed to scientific evidence. Yet nowhere does NAGPRA require scientific evidence of affiliation before remains are repatriated. Genetic testing, cranial comparisons, and other scientific methods are not considered more valid that oral traditions. . . . In short, decisions will be made on the basis of religious belief, not a showing of fact.").

[25] Macarro, *supra* note 23, at 47, 82.

[26] *See Finding Our Way Home: Achieving the Policy Goals of NAGPRA: Hearing Before the S. Comm. on Indian Affairs*, 112th Cong. 68, 72 (2011)(statement of Ted Isham, Cultural Preservation Manager, Muscogee Nation)("We are not at the table at the important decisionmaking [sic] stages and we need to be included. The Federal and Federally-assisted entities do not have the historical, traditional knowledge that we have, no matter how much they think they know about us. We are the only ones who can represent our interests and those of our relatives."); *see also* Dumont, *supra* note 23.

[27] *See* Bradley T. Lepper, *The People Who Peopled America*, *in* KENNEWICK MAN: THE SCIENTIFIC INVESTIGATION OF AN ANCIENT AMERICAN SKELETON 7, 22 (Douglas W. Owsley & Richard L. Jantz eds., Tex. A&M U. Press 2014)("Several Paleoamerican skeletons have been turned over to American Indian tribes for burial (e.g., Buhl, Browns Valley, On Your Knees Cave, Pelican Rapids, Marmes), and others continue to be sought by various tribes in spite of the fact that human remains of this antiquity are not considered to qualify for inclusion under the terms of [NAGPRA].") (citations omitted); *see also* Rex Dalton, *Rule Poses Threat to Museum Bones*, NATURE (Mar. 31, 2010), http://www.nature.com/news/2010/100331/full/464662a.html; Elizabeth Weiss, REBURYING THE PAST: THE EFFECTS OF REPATRIATION AND REBURIAL ON SCIENTIFIC INQUIRY 42 (Nova Sci. Pub. 2008) ("Anthropologists have consistently pointed out to Federal legislators and Native Americans that NAGPRA's intent was not to deal with unaffiliated and unidentifiable remains.").

[28] *See* Keith W. Kintigh, *Repatriation As a Force of Change in Southwestern Archaeology*, *in* OPENING ARCHAEOLOGY: REPATRIATION'S IMPACT ON CONTEMPORARY RESEARCH AND PRACTICE 195 (Thomas Killion ed., Sch. for Advanced Res. Press 2008)("Negative effects [of NAGPRA] have come largely from unenlightened implementation by Federal agencies."); *see also* Letter from Robert L. Kelly, President, Society for American Archaeology ("SAA"), to Kate Stevenson, Assoc. Dir., Cultural Resources, Stewardship and Partnerships, Nat'l Park Serv. (Feb. 5, 2002), http://rla.unc.edu/saa/repat/Agency/Stevenson.2002-02-05.html ("some [Federal] agencies might be stretching the all-important concept of 'cultural affiliation.'"); Letter from Keith W. Kintigh, President, SAA, to Bruce Babbitt, Sec'y of the Interior, U.S. Dep't of Interior (Apr. 13, 1999), http://saa.org/AbouttheSociety/GovernmentAffairs/RepatriationIssues/CriticalIssuesNAGPRA033104/tabid/220/Default.aspx ("The most important problem that has arisen in NAGPRA implementation is the widespread extension, by both agencies and

To evaluate these claims and other NAGPRA implementation questions, which are addressed in the concluding remarks, this study investigates the repatriation and disposition decisions that transferred control over thousands of human remains and funerary objects through published *Federal Register* Notices from 1992–2013.[29] It goes beyond taking stock, using over 20 years of data to assess some of the divergent compliance allegations and arguments that stretch and pull the Act taut. The accompanying analyses seek to better understand NAGPRA by examining and testing the number of human remains, funerary objects, consultants, evidence types, and cultural affiliates for the combined federal agency and museum NAGPRA decisions these institutions made. Data from some of the federal agency and museum sub-institutions, such as the U.S. Department of the Interior and universities (public and private), also are compared. Additionally, chronological and geographic information for the human remains and the categories or types of evidence, consultants, and affiliates are explored.

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museums, of the statutory definition of cultural affiliation beyond any legally defensible limits."); Letter from Jeffrey H. Altschul, President, SAA, to Melanie O'Brian, Acting Nat'l NAGPRA Program Manager, Nat'l Park Serv. (Jan. 16, 2015), http://www.saa.org/Portals/0/SAA/GovernmentAffairs/NAGPRA_NIC_Final%2001.16.15.pdf ("[s]ome archaeologists have pointed out a number of factual errors and inadequate cases being made for cultural affiliation."). Apparently vexed by accessible cultural affiliation data in a searchable format, SAA's President Altschul also expressed "uncertainty about the statutory authority of the culturally-affiliated human remains database" the National NAGPRA Office includes on its website. The database Altschul is referring to in his January 16, 2015, dated letter is the National NAGPRA Office's culturally affiliated database, which provides the public a basic means to search (by Native American group, federal agency/museum, or state/area) human remains and funerary objects published in all of the Federal Register Notices. As of this writing, "[t]he database includes 6,266 records and accounts for 60,754 Native American human remains and 1,346,456 associated funerary objects inventoried by 569 museums and Federal agencies." *See Culturally Affiliated Native American Inventories Database*, NAT'L PARK SERVICE, http://grantsdev.cr.nps.gov/Nagpra/CAI/ (last visited Dec. 27, 2015); U.S. GOV'T ACCOUNTABILITY OFF., GAO-10-768, NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT: AFTER ALMOST 20 YEARS, KEY FEDERAL AGENCIES STILL HAVE NOT FULLY COMPLIED WITH THE ACT (2010) [hereinafter GAO NAGPRA REPORT].

[29] The repatriation of Native American human remains and cultural objects prior to the enactment of NAGPRA, or any transfers of these cultural materials occurring outside of the Act, are not part of this review. For a discussion of repatriation before NAGPRA, *see* Duane Anderson, *Reburial: Is It Reasonable?*, in ARCHAEOLOGICAL ETHICS 200, 200-08 (Karen D. Vitelli ed., 1996). Nor does this paper address human remains and funerary objects that have been culturally affiliated but have not yet been published in *Federal Register* Notices. *See* Nat'l Park Serv., *Culturally Affiliated Inventories Not in Notices Report* (Jan. 27, 2016) http://www.nps.gov/nagpra/DOCUMENTS/CA-Not-in-Notices.pdf.

III. NAGPRA SYNOPSIS

NAGPRA is comprised of several course-altering measures, such as native consultation, native derived evidence equality with scientific evidence, and a bar to trafficking in Native human remains.[30] It permeates the oversight of Native American[31] heritage resources throughout the United States. The centerpiece of the Act is a logistically challenging requirement[32] for federal agencies[33] and museums[34] to repatriate their collections of human remains and cultural items[35] to lineal descendants,[36] and culturally affiliated[37] Indian tribes[38] and Native Hawaiian[39] organizations. Additionally, it regulates the disposition of culturally unidentifiable and unclaimed human remains and cultural items[40] as well as the intentional excavation and inadvertent discovery of these materials on

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[30] Native American Graves Protection and Repatriation Act §§ 3(b), 4, 25 U.S.C. §§ 3002(b), 3003 (2012).

[31] "Native American" is defined as "or relating to, a tribe, people, or culture that is indigenous to the United States." *See* 25 U.S.C. § 3001(9).

[32] *See* 25 U.S.C. § 3005 (1990).

[33] NAGPRA defines "Federal agency" as "any department, agency, or instrumentality of the United States. Such term does not include the Smithsonian Institution." National Museum of the American Indian Act ("NMAI"), Pub. L. No. 101-185, §§ 1-17, 103 Stat. 1336, 1336-47 (1989), 20 U.S.C. §§ 80q- 80q-15 (2012).

[34] The Act defines "museum" as "any institution or State or local government agency (including any institution of higher learning) that receives Federal funds and has possession of, or control over, Native American cultural items. Such term does not include the Smithsonian Institution or any other Federal agency." *See* 25 U.S.C. § 3001(8).

[35] *See* 25 U.S.C. § 3001(3) (1992).

[36] The regulations define "lineal descendant" as "an individual tracing his or her ancestry directly and without interruption by means of the traditional kinship system of the appropriate Indian tribe or Native Hawaiian organization or by the common law system of descendence to a known individual whose remains, funerary objects, or sacred objects are being claimed." 43 C.F.R. § 10.2(b)(1).

[37] *See* 25 U.S.C. § 3001 (2); *see also* 43 C.F.R. § 10.14 (2012) (outlining procedures for determining lineal descent and cultural affiliation).

[38] The Act defines "Indian tribe" as "any tribe band, nation, or other organized group or community of Indians, including any Alaska Native village (as defined in, or established pursuant to, the Alaska Native Claims Settlement Act)[43 U.S.C. §§ 1601-1629h], which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians." *See* 25 U.S.C. § 3001(7) (1992).

[39] "Native Hawaiian" is defined as "any individual who is a descendant of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the State of [Hawai'i]." 25 U.S.C. § 3001(10) (1992).

[40] *See* 25 U.S.C. § 3002(b) (Unclaimed Native American human remains); *id.* § 3003(a) (inventory process); *id.* § 3006(c)(5)(authority to develop a disposition process for culturally unidentifiable human remains); Disposition of Culturally Unidentifiable Human Remains, 43 C.F.R. § 10.11 (2010).

federal and tribal lands after the November 16, 1990 enactment date.[41] Penalty provisions for non-compliance[42] and illegal trafficking[43] also are provided. Museums, Indian tribes, and Native Hawaiian organizations also are eligible to receive federal grants to aid the identification and repatriation of human remains and cultural items.[44] Furthermore, the Act created the NAGPRA Review Committee that, among other things, monitors repatriation, hears disputes, and makes recommendations to the Secretary of the Interior.[45]

Because this article addresses the transfer of Native American human remains and funerary objects through the provisions of repatriation (where cultural affiliation is determined) and disposition (where cultural affiliation cannot be established),[46] the salient features of each process is explained. Although they involve different categories of cultural materials under the Act, both require the publication of Inventory Notices in the *Federal Register* as the means for informing the public about these decisions.

A. Repatriation

NAGPRA's repatriation directive recognizes a legal interest in returning Native American human remains and cultural items to identified lineal descendants and culturally affiliated Indian tribes and Native Hawaiian organizations.[47] As an initial step, the Act requires all federal agencies and museums in possession[48] or control[49] of Native American human remains

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[41] *See* Native American Grave Protection and Repatriation Act, Pub. L. No. 101-601, 104 Stat. 3048 (1990).

[42] 25 U.S.C. § 3007.

[43] 18 U.S.C. § 1170.

[44] 25 U.S.C. § 3008.

[45] *Id.* § 3006(a)-(i).

[46] Unassociated funerary objects, sacred objects, and objects of cultural patrimony are not addressed in this article because the Act uses a separate process to repatriate these cultural items. *See* 25 U.S.C. § 3004; 43 C.F.R. § 10.10(a) (repatriation process for unassociated funerary objects, sacred objects, and objects of cultural patrimony); *see also* 43 C.F.R. § 10.8(f) (publication of a Notice of Intent to Repatriate in the *Federal Register*).

[47] *See* 25 U.S.C. §§ 3007(a)-(c) (1990).

[48] The regulations define "possession" as "having physical custody of human remains, funerary objects, sacred objects, or objects of cultural patrimony with a sufficient legal interest to lawfully treat the objects as part of its collection." 43 C.F.R. § 10.2(3)(i).

[49] The regulations define "control" as "having a legal interest in human remains, funerary objects, sacred objects, or objects of cultural patrimony sufficient to lawfully permit the museum or Federal agency to treat the objects as part of its collection . . . whether or not the [objects] . . . are in the physical custody of the museum or Federal agency." 43 C.F.R. § 10.2(3)(ii).

and associated funerary objects to "compile an inventory of such items."[50] These inventories are to be "simple itemized list[s]"[51] that are "based on information possessed by" the federal agencies and museums.[52] "[T]o the extent possible" they should "identify the geographical and cultural affiliation" of the human remains and associated funerary objects.[53] Additionally, the inventories were to be "completed in consultation with tribal government and Native Hawaiian organization officials and traditional religious leaders" by November 16, 1995.[54]

Within six months of completing an inventory, the federal agency or museum had to "notify the affected Indian tribes or Native Hawaiian organizations" about "the cultural affiliation of any particular Native American human remains or associated funerary objects" with a draft Inventory Notice.[55] Additionally, a copy of this Inventory Notice must be sent to the Secretary of the Interior who then publishes it in the *Federal Register*.[56] Human remains and associated funerary objects identified in inventories must be expeditiously returned upon the request of the lineal descendant, Indian tribe or Native Hawaiian organization.[57]

For human remains and associated funerary objects that were not culturally affiliated through the inventory process, the Act requires their expeditious return[58] to the Indian tribe or Native Hawaiian organization that demonstrates cultural affiliation by a preponderance of the evidence. Such evidence may include "geographical, kinship, biological, archaeological,

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[50] 25 U.S.C. § 3003(a).

[51] *Id.*

[52] *Id.* Indian tribes and Native Hawaiian organizations also may request additional "documentation" concerning the human remains and associated funerary objects, such as existing institutional records and relevant studies that provide greater detail about the cultural materials. The term "documentation," however, "shall not be construed to be an authorization for, the initiation of new scientific studies." *Id.* at § 3003(b)(2).

[53] 25 U.S.C. § 3003(a).

[54] *Id.* §§ 3003(b)(1)(A)-(B). A museum that made a good faith effort to complete its inventory could request an extension from the Secretary of the Interior. *See id.* § 3003(c). A separate regulatory process also exists for newly acquired or previously misreported human remains and associated funerary objects. *See* 43 C.F.R. § 10.13.

[55] *See* 25 U.S.C. § 3003(d)(1).

[56] *See id.* § 3003(d)(3).

[57] *See id.*

[58] There are only two exceptions to expeditiously repatriating culturally affiliated human remains and associated funerary objects. One is if they are determined to be "indispensable for completion of a specific scientific study, the outcome of which would be a major benefit to the United States." *See* 25 U.S.C. § 3005(b). The other is when there are multiple claimants and the "Federal agency or museum cannot clearly determine which requesting party is the most appropriate. *See id.* at § 3005(e). These exceptions, however, are not permanent blocks to repatriation.

anthropological, linguistic, folkloric, oral traditional, historical, or other relevant information or expert opinion."[59] Like the inventory procedures, consultation[60] is required as well as publication of a Notice in the *Federal Register* prior to repatriation.[61]

B. Disposition

When human remains are determined to be culturally unidentifiable, either for insufficient evidence or because they are culturally affiliated solely with a non-Federally recognized Indian group (i.e., they are not also affiliated with a Federally-recognized Indian tribe), the Federal agency or museum possessing such remains and associated funerary objects must provide this information to the manager of the National NAGPRA Program, who then forwards it to the Review Committee.[62] All culturally unidentifiable human remains and associated funerary objects are subject to the Act's disposition provisions.

The Act uses disposition in two separate sections. Under the intentional excavation and inadvertent discovery provisions, disposition means the transfer of human remains and cultural items removed from federal or tribal lands after NAGPRA's enactment to lineal descendants, Indian Tribes, or Native Hawaiian organizations.[63] Disposition also refers to the process for addressing human remains the institutions determined to be culturally unidentifiable in the inventory stage. These remains are part of the NAGPRA Review Committee's oversight responsibility.[64] Prior to finalizing the disposition regulations, the transfer of culturally unidentifiable remains required several cumbersome steps.[65] Institutions would submit a request to the NAGPRA Review Committee, present the case at a committee meeting, and with the Committee and Secretary of the Interior's concurrence, the disposition decision would be published in the *Federal Register*.[66] In 2010, the regulations for the disposition of culturally

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[59] *See id.* § 3005(a)(4).

[60] *See id.*

[61] *See* 43 C.F.R. § 10.10(b)(iii)(2).

[62] *See* 43 C.F.R. § 10.10(g).

[63] *See* 25 U.S.C. § 3002(a).

[64] *See id.* § 3006(c)(5).

[65] *See* 43 C.F.R. § 10.10(d)(2)-(6).

[66] *See, e.g.*, Notice of Inventory Completion for Native American Human Remains and Associated Funerary Objects from the Titicut Site in Bridgewater, MA in the Possession of the Robert S. Peabody Museum of Archaeology, Andover, MA, 60 Fed. Reg. 8733 (Feb. 15, 1995) (request to transfer human remains and funerary objects to a non-Federally recognized Indian group); *see* Notice of Inventory Completion: Tennessee Department of Environment and Conservation, Division of Archaeology, Nashville, TN, 75 Fed. Reg. 45660, 45661

unidentifiable human remains were finalized, making the process for transferring them and culturally affiliated remains essentially the same.[67]

IV. PRIOR QUANTITATIVE STUDIES AND DATA RESOURCES

The few published quantitative-based NAGPRA evaluations generally fall into two categories. They either address the effects of the Act on an aspect of anthropology or analyze its implementation. Two of the anthropology related analyses suggest NAGPRA is impeding the study of Native remains in the United States, while two others indicate this is not necessarily the case. In an implementation study, the Government Accountability Office (GAO) found eight federal agencies were not in full compliance with NAGPRA.[68] And a separate study determined institutions practiced aspects of culturally affiliating human remains and funerary objects differently. Additionally, the National Park Service's National NAGPRA Program Office provides implementation information and analytical reports to the public as part of its nationwide coordination role.[69]

To gauge NAGPRA's effect on the study of Native American human remains, one analysis calculated the number of osteological articles published in the American Journal of Physical Anthropology from 1975 to 2005.[70] The results "indicate that compared to pre-NAGPRA [November 16, 1990], osteological studies containing Native American remains have decreased, fewer sites are used, and fewer geographic locations are examined," suggesting "NAGPRA impedes research."[71] Another analysis surveyed Native American related papers presented at the American Association of Physical Anthropologists meetings from 1980 to 2005.[72] Its

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(Aug. 3, 2010).

[67] *See* 43 C.F.R. § 10.11; Native American Graves Protection and Repatriation Act Regulations--Disposition of Culturally Unidentifiable Human Remains, 75 Fed. Reg. 12,378 (Mar. 15, 2015) (to be codified at 43 C.F.R. pt. 10).

[68] While not falling under the purview of NAGPRA, the Smithsonian Institution also is the subject of a GAO report that evaluated its system of repatriation. *See* U.S. GOVERNMENT ACCOUNTABILITY OFFICE, SMITHSONIAN MUSEUM: MUCH WORK STILL NEEDED TO IDENTIFY AND REPATRIATE INDIAN HUMAN REMAINS AND OBJECTS (2011), http://www.gao.gov/assets/320/318818.pdf.

[69] *See National NAGPRA*, NAT'L PARK SERV. US DEP'T OF THE INTERIOR, http://www.nps.gov/nagpra/ (last visited Feb. 12, 2016).

[70] *See* ELIZABETH WEISS, NAGPRA: BEFORE AND AFTER 1 (2006), http://www.friendsofpast.org/nagpra/06WeissNAGPRA.pdf.; Elizabeth Weiss, *Research and Nagpra*, 6 SAA ARCHAEOLOGICAL REC. 29, 29 (May 2006), http://www.saa.org/Portals/0/SAA/Publications/thesaaarchrec/may06.pdf.

[71] *See id.*

[72] *See* Ann M. Kakaliouras, Multivocality, *Toward a New and Different Osteology: A Reflexive Critique of Physical Anthropology in the United States since the Passage of*

findings also connote a post-NAGPRA decline in the number of Native American data-derived studies occurred from 1995 to 2005.[73]

Using a similar methodology, a master's thesis reached a different outcome at a regional level.[74] To ascertain NAGPRA's effect on Southeast bioarchaeology research, the author of the thesis counted Native related bioarchaeological studies between 1970 and 2009 from several publications. Professional anthropologists also were surveyed about their regional work experiences before and after NAGPRA. The results suggest NAGPRA had not degraded Southeast bioarchaeological research. Another analysis reviewed Native-focused physical anthropology and bioarchaeology papers published in the *American Journal of Physical Anthropology* and *American Antiquity* between 1985 and 1996. The results indicated both journals published more papers about Native human remains from 1990 to 1996 than the 1985 to 1989 time frame, suggesting that NAGPRA did not immediately inhibit anthropological research.[75]

The GAO report analyzed almost twenty years of data from eight federal agencies with large Native American collections and found they were not in full compliance with the Act.[76] It also provided general implementation statistics for all of the federal agencies.[77] As of September 30, 2009, the report noted federal agencies had published 309 Inventory Notices. The Notices accounted for 16,302 Native American human remains, or 55% of the agency inventoried remains, and 193,324 associated funerary objects, or 74% of reviewed agencies' inventoried cultural items.[78]

Additionally, the author of this paper produced a NAGPRA implementation analysis for a Society for American Archaeology

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NAGPRA, *in* OPENING ARCHELOGY: REPATRIATION'S IMPACT ON CONTEMPORARY RESEARCH AND PRACTICE 115-120 (Thomas Killion ed., Santa Fe School for Advanced Research Press 2007).

[73] *See id.*

[74] William C. Broughton, NAGPRA's Impact on North Carolina and the Southeast: Research on the Research (Oct., 2010) (unpublished M.A. thesis, East Carolina University), http://thescholarship.ecu.edu/handle/10342/3157.

[75] *See* Thomas W. Killon & Paula Molloy, Repatriation's Silver Lining, http://www.saa.org/portals/0/SAA/publications/SAAbulletin/17-2/SAA17.html.

[76] *See* GAO NAGPRA REPORT, *supra* note 28.

[77] The GAO focused on the following eight agencies and bureaus due to their significant collections of Native American human remains and cultural items: the Department of the Interior's Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, U.S. Fish and Wildlife Service and National Park Service; the Department of Agriculture's U.S. Forest Service; the U.S. Army Corps of Engineers; and the Tennessee Valley Authority. *See* GAO NAGPRA REPORT, *supra* note 28, at 3, 26-27, 53-54.

[78] GAO NAGPRA REPORT, *supra* note 28, at 22-23.

conference in 2000.[79] Aspects of this earlier study are similar to this undertaking in that it examined all federal agency and museum decisions published in *Federal Register* Inventory Notices from 1992 through 1999.[80] The study found the following for the reviewed decisions: 1) greater availability of cultural affiliation information (i.e., more human remains, Native American consultants, and evidence types) is associated with an increase in the number of cultural affiliates; 2) competing claims between potential cultural affiliates had no effect on the number of cultural affiliates; 3) federal agencies and museums arrived at similar outcomes despite implementing certain NAGPRA provisions differently; and 4) federal agencies and museums made frequent repatriation decisions to more than one cultural affiliate.[81]

The National NAGPRA Program Office ("Office"), which coordinates the requirements the Act assigned to the Secretary of the Interior, is the most important source for collected and summarized repatriation data. The Office drafts annual reports detailing the numbers of human remains and cultural items included in *Federal Register* notices as well as administering federal grants, disputes, and other day-to-day matters.[82] It also produces reports when requested by the NAGPRA Review Committee, which often incorporate statistical information on topics such as culturally unidentifiable human remains, large museum collections, and database mapping.[83] National NAGPRA also maintains Review Committee reports to Congress, which contain data related to the transfer of human remains and cultural items.[84]

V. DATA AND METHODOLOGY

The data used in this article derive from the Act's Inventory Notices published in the *Federal Register* beginning in 1992 and running through

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[79] *See* Jason C. Roberts, *A Native American Graves Protection and Repatriation Act Census: Examining the Status and Trends of Culturally Affiliating Native American Human Remains and Associated Funerary Objects between 1990 and 1999*, TOPICS IN CULTURAL RESOURCE LAW 79, 83-88 (Donald Forsyth Craib ed., 2000).

[80] *Id.* at 69

[81] *Id.* at 79, 83-88.

[82] *See National NAGPRA Documents and Publications*, NAT'L PARK SERV., http://www.nps.gov/nagpra/DOCUMENTS/INDEX.htm (last visited Dec. 10, 2013).

[83] *See Native American Graves Protection and Repatriation Review Committee Materials*, NAT'L PARK SERV., http://www.nps.gov/nagpra/REVIEW/meetings/materials/47th /RC_Meeting_Materials_47th.htm#dbmaps (last visited Dec. 10, 2013).

[84] *See Native American Graves Protection and Repatriation Review Committee Reports to the Congress*, NAT'L PARK SERV., http://www.nps.gov/nagpra/REVIEW/Reports_to_Congress/RTC_Index.htm? (last visited Dec. 10, 2013).

2013.[85] Each published Notice announces the movement of specific Native American human remains and funerary objects into the final stage of the repatriation or disposition process, including the rationale for their transfer to particular recipients. Providing the only public notification through a descriptive narrative of the decision, Inventory Notices are the primary source to analyze NAGPRA's end-of-stream implementation.

A. Source

Inventory Notices are packed with descriptive information about each repatriation and disposition decision, including details about the federal agency and museum type (e.g., Bureau of Indian Affairs, Harvard University, American Museum of Natural History, etc.), the engagement of Native consultants, the nature of the cultural materials, their geographic origin, chronological data, the collection history, the types of evidence used (archaeological, biological, historical, oral tradition, etc.), and an explanation for transferring the subject items to a recipient or recipients. Each published Notice, therefore, summarizes the contents and findings contained within a corresponding inventory of Native American human remains and funerary objects.[86]

The compendium of published Inventory Notices also serves as a synopsis of North American history and an abridged narrative of Native-Non-Native encounters. Spanning the timeframe from the ancient peopling of the Western Hemisphere[87] to the onset of modernity in the early 1900s[88] and including cultural materials from every state, the Inventory Notices are more than simple receipts memorializing transactions. Indeed, each set of

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[85] While enacted in 1990, the first publication of a Notice of Inventory Completion did not occur until 1992. *See* Notice of Completion of Inventory of Native American Human Remains and Associated Funerary Objects within the Campbell Collection, Joshua Tree National Monument, 57 Fed. Reg. 27,269 (June 18, 1992) (the repatriation decision included 11 human remains and 12,225 associated funerary objects dating between 800 A.D. and 1800 A.D.).

[86] *See* 43 C.F.R. § 10.9(e)(2) ("The notice . . . must[s]ummarize the contents of the inventory in sufficient detail so as to enable the recipients to determine their interest in claiming the inventoried items . . . .").

[87] *See* Notice of Inventory Completion for U.S. Dept. of Agriculture, Forrest Service, Arapaho and Roosevelt National Forrest and Pawnee Grasslands, Fort Collins, CO, 77 Fed. Reg. 57113 (Sept. 17, 2012) (The transfer of culturally unidentified human remains and 24 funerary objects dating to "approximately 9,000 yeas BP" or 7,050 B.C. These ancient human remains are known as the Gordon Creek burial.).

[88] *See* Notice of Inventory Completion for the Slater Museum of Natural History, University of Puget Sound, Tacoma, WA, 72 Fed. Reg. 27,846 (May 17, 2007) (The repatriation of one set of human remains included a note on the skull that states "one of Poker Jim's warriors found near where he was killed. April 1918.").

human remains (male and female, infant to elderly) is linked to a dynamic community—often representatives from the historical interaction between the Indigenous and colonizing Europeans. From the Spanish Southwest,[89] to the founding Thirteen Colonies,[90] through the U.S. exploration of Alaska,[91] the European colonization of Hawai'i,[92] and the closing skirmishes of the Plains Wars,[93] the Native remains and funerary objects identified for return in each Notice often invokes a difficult shared past of colonialism and atrocities.[94]

B. Data Collection

The Inventory Notices were obtained from the National NAGPRA Program website,[95] which includes an electronic chronological listing of the

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[89] *See* Notice of Inventory Completion for the Colorado Historical Society, Denver, CO, 76 Fed. Reg. 28071 (May 13, 2011) (The repatriation of seven human remains dating from the 1700s to the 1800s and including two sets of remains that were from "Massacre Cave" where a group of Navajos were killed by the Spanish military in 1805).

[90] *See* Notice of Inventory Completion for the Warren Anatomical Museum, Harvard University, Boston, MA, 74 Fed. Reg. 65150 (Dec. 9, 2009) (The repatriation of one set of human remains from the 17th Century, including museum records that describe "the human remains as 'one of the Uncas Tribe . . . Connecticut. Uncas was a well-known 17th Century leader of the Mohegan Tribe.").

[91] *See* Notice of Inventory Completion for the University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia, PA, 66 Fed. Reg. 22253 (May 3, 2001) (The repatriation of one set of Native remains dating to the 19th Century with museum documentation describing the remains as "Eskimo" from "Choris Peninsula in Kotzebue Sound.").

[92] *See* Notice of Inventory Completion of Peabody Museum of Natural History, Yale University, CT, 59 Fed. Reg. 9248 (Feb. 25, 1994) (repatriating 101 sets of Native Hawaiian human remains collected in the 1800s).

[93] *See* Notice of Inventory Completion of the Madison County Historical Society, Edwardsville, IL, 75 Fed. Reg. 5104 (Feb. 1, 2010) (The repatriation of a scalp representing one set of human remains from 1876 A.D. The associated documentation states the remains are "part of Indian scalp" and the provenance is listed as the "Custer Massacre.").

[94] *See* Notice of Inventory Completion from the California Department of Parks and Recreation, Sacramento, CA, 77 Fed. Reg. 59647 (Sept. 28, 2012) (The repatriation of two sets of human remains and two funerary objects dating to December 29, 1890 with documentation stating they are "believed to have been removed from the massacre site at Wounded Knee in Shannon County, SD."); *see also* Notice of Inventory Completion of the Denver Museum of Nature and Science, Denver, CO, 69 Fed. Reg. 15,368 (Mar. 25, 2004) (The repatriation of a scalp representing one set of human remains dating to 1864 with museum records stating the "scalp from an Arapaho Chief at the Sand Creek Massacre, November 29, 1864.").

[95] *See Notices of Inventory Completion Database*, NAT'L PARK SERV., http://www.nps.gov/nagpra/FED_NOTICES/NAGPRADIR/index.html (last visited Mar. 10, 2014).

published Notices, and were verified using the *Federal Register* website.[96] The Notices were downloaded into Microsoft OneNote by date of publication to facilitate their analysis.

Prior to initiating a full review, 50 Notices were randomly surveyed to identify consistent data fields and develop a summary template for the collection of standardized information. In addition to administrative tracking information, the template included the following fields: 1) the NAGPRA entity name and type; 2) the consultant name, number and type; 3) the number of Native American human remains; 4) the number of associated funerary objects; 5) the number and types of evidence categories used in the decision; 6) chronological information; and 7) the name, number, and type of recipients.

Using the summary template as a data collection guide, the repatriation and disposition Inventory Notices were analyzed in Microsoft OneNote. Notes were placed directly onto the OneNote copied Notices and the data fields of the corresponding summary templates were filled out, essentially becoming a snapshot of each Notice decision. The individual Notices, however, do not necessarily represent a single repatriation or disposition decision. Instead, a Notice from a federal agency or museum might contain several different decisions about collections of human remains and funerary objects and include multiple repatriation and disposition decisions to various Native recipients. Data collection, therefore, occurred at the decision level. Depending on the number of decisions, an Inventory Notice can have one or more corresponding summary templates.

After completing the analysis of Notices for a single publication year, the data collected onto the summary templates were entered into the statistical software database SPSS (Version 22) at the decision level. Corrections published in the *Federal Register* that modified information in previous Notices were analyzed, and the updated data clarifications were added to the summary templates and database.

As previously discussed in the NAGPRA Synopsis section above, repatriation decisions comprise culturally affiliated human remains and funerary objects and disposition decisions encompass human remains and funerary objects that are either culturally unidentifiable or are affiliated with non-federally recognized Indian groups. While both types of decisions operate under different provisions of the Act and the implementing regulations, they share the same basic characteristics—a decision to transfer human remains and funerary objects to specific Native Americans based on certain evidence.

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[96] *See Federal Register*, NAT'L ARCHIVES AND RECORDS ADMIN., https://www.federalregister.gov/ (last visited Mar. 10, 2014).

C. Data Description

The following descriptions of the collected data categories are provided to explain the nature of the information and the choices that were made in its organization for this paper.

1. NAGPRA entity

The NAGPRA Entity is the designation of the federal agency or museum decision-making entity under the Act that is publishing its repatriation and/or disposition decision in a *Federal Register* Notice.[97] In addition to recording the general designation of "federal agency" or "museum," the type of institution is noted in greater detail. A Notice published by the U.S. Department of the Interior's National Park Service, therefore, is designated as a federal agency, the Department of the Interior, and the National Park Service. The U.S. Department of Defense's Department of the Navy is a federal agency, the Department of Defense, and the Navy.

Museum institutions are treated the same, but have greater variety in entity type. For instance, the University of Pennsylvania Museum of Archaeology and Anthropology is a museum, university, and private university. San Francisco State University is a museum, university, and a state university. The American Museum of Natural History in New York is a museum, a cultural institution, and a large museum. The Sheboygan County Historical Museum of Wisconsin is a museum, a cultural institution, and a small-medium sized museum. The California Department of Parks and Recreation is a museum, a state agency, and the State of California. The Colorado Historical Society (now "History Colorado") likewise is a museum, a state agency, and the State of Colorado.[98]

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[97] *See* 43 C.F.R. § 10.2(3)(ii). Occasionally, two institutions will be listed on the Notice. Usually, the primary institution that has control over the Native American human remains and/or associated funerary objects has housed all or part of the collection at the second institution. Under these circumstances, the institution with legal control over the cultural materials is recorded as the sole NAGPRA entity, even if the second institution possesses them and provides assistance in the affiliation decision.

[98] Not all historical societies are considered state agencies. The Southern Oregon Historical Society for example is not a State of Oregon government entity. Therefore, it is a museum, a cultural institution, and a small-medium museum for the purpose of this paper. The designation of a historical society as a state agency or a cultural institution depends on the level of control a state government has over the entity.

2. Native Consultants

"Native Consultants" include federally recognized Indian Tribes,[99] Native Hawaiian Organizations,[100] lineal descendants,[101] non-federally recognized Indian groups, and non-NAGPRA recognized Native Hawaiian groups.[102] The Alaska Native Corporations (group, regional, urban, and village) established under the Alaska Native Claims Settlement Act[103] that

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[99] Federally recognized Indian Tribes "are acknowledged to have the immunities and privileges available to federally recognized Indian tribes by virtue of their government-to-government relationship with the United States as well as the responsibilities, powers, limitations and obligations of such tribes." *See* Indian Entities Recognized and Eligible to Receive Services From the United States Bureau of Indian Affairs (Tribal List), 79 Fed. Reg. 4748-49 (Jan. 29, 2014). Currently, there are 566 federally recognized Indian Tribes on the Tribal List. *Id.* The Bureau of Indian Affairs is charged with regularly publishing a list of federally recognized Indian Tribes pursuant to the Federally Recognized Indian Tribe List Act of 1994, Pub. L. No. 103-454, Title I (1994).

[100] NAGPRA defines "Native Hawaiian Organization" to mean: "any organization which—(A) serves and represents the interests of Native Hawaiians, (B) has as a primary and stated purpose the provision of services to Native Hawaiians, and (C) has expertise in Native Hawaiian Affairs, and shall include the Office of Hawaiian Affairs and Hui Malama I Na Kupuna O Hawai'i Nei." 25 U.S.C. § 3001 (11). Hui Malama I Na Kupuna O Hawai'i Nei, however, dissolved as an organization on January 23, 2015. *See National NAGPRA*, NAT'L PARK SERV., http://www.nps.gov/nagpra/ (last visited May 25, 2015); *see also* Articles of Dissolution for Hui Malama I Na Kupuna O Hawaii Nei (Dec. 20, 2014), http://www.nps.gov/nagpra/DOCUMENTS/DCCA-Hui-Malama-dissolved.pdf. In addition to the NAGPRA designated Office of Hawaiian Affairs and Hui Malama I Na Kupuna O Hawai'i Nei, the National NAGPRA Program Office determined the following groups are Native Hawaiian Organizations: 1) Hawai'i Island Burial Council; 2) Kauai/Niihau Island Burial Council; 3) Maui/Lanai Island Burial Council; and 4) Molokai Island Burial Council. *See* Organizations listed as Native Hawaiian Organizations, NATIVE AMERICAN CONSULTATION DATABASE, NAT'L PARK SERV., http://grantsdev.cr.nps.gov/Nagpra/NACD/ (Search "Hawai'i" in "State Name" search bar). All other Native Hawaiian groups listed in Notices as consultants are considered "non-NAGPRA recognized Native Hawaiian groups" for this article.

[101] A single family line is counted as one lineal descendant in this study even if several individuals from the same family are identified in the Notice. *See* 61 Fed. Reg. 3459 (Jan. 31, 1996) (Black Hawk's human remains were successfully claimed by the three great, great grandchildren of Black Hawk's brother, Mountain).

[102] *See* discussion *supra* note 99.

[103] *See* Pub. L. No. 92-203, 85 Stat. 688 (1971), as amended at 43 U.S.C. §§ 1601-1629h. The Alaska Native Claims Settlement Act ("ANCSA") provided for the organization of several different Native corporation types. It established 12 regional Native corporations and over 200 village level corporations. Nonresident Alaska Natives formed a 13th regional corporation. ANCSA also enabled groups that could not form village corporations to create Alaska Native group corporations under section 14(h)(2). Alaska Natives living in Juneau, Kenai, Kodiak, and Sitka also were able to organize urban corporations under section 14(h)(3).

are not also federally recognized Indian Tribes were tracked as non-federally recognized Indian groups and under the separate category of Alaska Native Corporations.[104]

This article used the Bureau of Indian Affairs' regularly published list of federally recognized Indian entities to determine the tribal status of a consultant, which is subject to change.[105] For instance, the Mashpee Wampanoag Tribe participated as a consultant in several Notices before the Department of the Interior acknowledged it as an Indian Tribe in 2007.[106] Additionally, consultants were identified and counted at the single native entity level rather than being lumped into consortiums[107] or separated out at the band level.[108] In line with NAGPRA's broad consultation provisions, NAGPRA Entity attempts to consult were counted regardless of the Native Consultant response to an invitation or level of participation.[109]

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[104] The GAO report noted concern with the inclusion of Alaska Native Corporations as "Indian Tribes" in the NAGPRA regulatory definition and the National NAGPRA Program tribal list, asserting that this is counter to the statutory definition. *See* GAO NAGPRA REPORT, *supra* note 28, at 14-16, 39, 54. In response, the National NAGPRA Program requested legal guidance from the Department of the Interior's Office of the Solicitor. Agreeing with the GAO findings, the Office of the Solicitor concluded Alaska Native Corporations are not included within the Act's definition of Indian Tribes and suggested that the regulatory definition should be brought into conformity with the statutory definition. *See Office of the Solicitor Memorandum on List of Indian Tribes for the Purpose of Carrying Out NAGPRA*, U.S. DEP'T. OF THE INTERIOR (Mar. 18, 2011), http://www.nps.gov/nagpra/DOCUMENTS/Solicitors_Memo_ANCSA_03182011.pdf.

[105] *See Tribal Directory*, US DEPT. OF THE INTERIOR BUREAU OF INDIAN AFFAIRS, http://www.bia.gov/WhoWeAre/BIA/OIS/TribalGovernmentServices/TribalDirectory (last visited Feb. 12, 2016).

[106] The Mashpee Tribe first appeared on the list of federally recognized Indian Tribes in 2008. "The Mashpee Wampanoag Tribe was acknowledged [by the Department of the Interior] under 25 CFR part 83. The final determination for Federal acknowledgment became effective on May 23, 2007." *See* 73 Fed. Reg. 18,553 (Apr. 4, 2008).

[107] Several Notices list the "Wabanaki Intertribal Repatriation Committee," which is comprised of the Aroostook Band of Micmac Indians of Maine, Houlton Band of Maliseet Indians of Maine, Passamaquoddy Tribe of Maine, and the Penobscot Tribe of Maine–all federally recognized Indian Tribes. This article did not count the Wabanaki Intertribal Repatriation Committee as a consultant. Instead, it counted the four federally recognized tribal members of this consortium. *See generally*, 74 Fed. Reg. 65,149 (Dec. 9, 2009).

[108] The Minnesota Chippewa Tribe is a single federally recognized Indian Tribe with six constituent bands, the Bois Forte Band ("Nett Lake"); Fond du Lac Band; Grand Portage Band; Leech Lake Band; Mille Lacs Band; and White Earth Band. Often, one or more of these bands is treated as a separate tribal consultant in a Notice. This article only counted the Minnesota Chippewa Tribe and all of its bands as a single Tribe. Similarly situated Indian Tribes with multiple bands were counted in the same manner. *See generally*, 62 Fed. Reg. 14,440 (Mar. 26, 1997).

[109] If an entity made an attempt to consult on the repatriation or disposition of native

3. Native American Human Remains

The number of Native American human remains in each Notice were counted and recorded at the decision level. As discussed previously, a Notice does not always represent a single affiliation decision. Instead, it might contain several different collections of human remains and funerary objects and include multiple affiliation or disposition decisions to various recipients. Reviewing each decision, the number of human remains described in the text were tallied and compared to the summation at the end of the Notice. Discrepancies between the numbers were resolved in favor of the detailed descriptions of the remains delineated in the body of the decisions.

Occasionally, the number of human remains in a Notice could not be clearly identified. Applying the principle of the Minimum Number of Individuals ("MNI"), which refers to the fewest possible number of people in a skeletal collection, allowed a reasonable number to be obtained.[110]

4. Funerary objects

As in the case of human remains, funerary objects were counted and recorded at the decision level. The number of funerary objects were totaled and compared to the summation at the end of each Notice.[111] Discrepancies were resolved in favor of the funerary object descriptions described in the body of the decisions.[112] Although Inventory Notices should only include Native American human remains and associated funerary objects, unassociated funerary objects were occasionally published as being associated funerary objects. While associated funerary objects and unassociated funerary objects have different provisions under the Act,[113] they are not distinguished in this article because both types of funerary objects were treated as the same category by the publishing NAGPRA

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human remains and funerary objects, it is counted as consultation with the subject Tribe regardless of that Tribe's decision not to respond. *See generally*, 66 Fed. Reg. 56,856 (Nov. 13, 2001).

[110] *See* 60 Fed. Reg. 19407 (Apr. 18, 1995) (The Notice included human remains consisting of 36 whole and three fragmentary human teeth. Since humans only have 32 adult teeth and 20 juvenile teeth, the Minimum Number of Individuals for the remains in this Notice is 2.).

[111] *Id.*

[112] *Id.*

[113] *See* 25 U.S.C. § 3003(d) (notification for the cultural affiliation of human remains and associated funerary objects); *Id.* § 3004; 43 C.F.R. § 10.8(a)-(f) (notification for the cultural affiliation of unassociated funerary objects, sacred objects, and objects of cultural patrimony).

Entities. For purposes of this article, unless otherwise stated, associated funerary objects, unassociated funerary objects, and funerary objects are treated the same.

As the case with human remains, the number of funerary objects in a Notice occasionally could not be clearly identified. Applying the principle of the Minimum Number of Objects, which refers to the fewest possible number of objects in a collection, allowed a reasonable number to be calculated.[114]

5. Evidence Types

In addition to counting the amount of evidence NAGPRA Entities marshaled to support their native status (i.e., the remains are Native American), repatriation, and disposition decisions,[115] this article recorded the frequency various evidence types were used. The Act contemplates an expansive range of evidence to demonstrate affiliation, including "geographical, kinship, biological, archaeological, anthropological, linguistic, folkloric, oral tradition, historical, or other relevant information or expert opinion."[116]

The broad evidentiary categories and potential overlap, such as "archaeological," "biological," and "folkloric" arguably fitting under "anthropological," makes it difficult to solely rely on the Act's enumeration of evidentiary categories to identify evidence usage in the published

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[114] *See* Native American Graves Protection and Repatriation Review Committee: Finding, 58 Fed. Reg. 19,688 (Apr. 15, 1993). This Notice did not provide the exact number of the funerary objects it contained. It did, however, describe the cultural materials, and the principle of Minimum Number of Objects could be applied. The following categories were used: 1) historic glass trade beads (at least 2 objects); 2) native shell beads (at least 2 objects); 3) bone beads (at least 2 objects); 4) chipped stone implements (at least 2 objects); 5) other stone implements (at least 2 objects); 6) garment remnants (at least 2 objects); and 7) bone tools (at least 2 objects). The total Minimum Number of Objects in this case is 14.

[115] Due to the complexity and occasional vagueness of evidentiary descriptions in the Notices, the evidence types in each decision were tallied as opposed to counting the number of times a particular evidence type appeared. Under the protocol used for this article, "archaeology, carbon 14 dating, Late Woodland projectile points" are counted as one archaeological type and one artifact analysis (the type of point falling into archaeological evidence and the recognition of a "Native American" or "non-European" implement falling into the "artifact identification" evidentiary category. Similarly, the biological evidence types of "osteological examination, dental analysis" are counted as one as opposed to two separate lines of evidence. Therefore, a decision noting affiliation to a particular Indian tribe that is based on expert opinion, geography, archaeology, carbon dating, Late Woodland projectile points, site organization, an osteological examination, dental analysis, oral tradition, and linguistics would be seven evidence types and not ten.

[116] *See* 25 U.S.C. § 3005(a)(4); see also 43 C.F.R. §§ 10.2(e), 10.10(b), 10.14.

Notices.[117] Moreover, some of the evidence relied on in the Notices does not necessarily fit squarely within any of the lines of evidence enumerated in the Act, instead falling under the catch all "other relevant information."[118] The Author compared the Act's evidentiary categories with the cited lines of evidence in the decisions and found that the following types of evidence were used in making repatriation and disposition decisions:

- *Geographic Evidence* means information relating to the geographic location of the recovery site of the human remains and/or funerary objects that were the subject of the decision.[119]
- *Expert Opinion Evidence* means information obtained from Native American consultants, contractors, publishing entity staff members, and any other subject matter experts.[120]
- *Archaeological Evidence* means information relating to the recovery site and archaeologically derived data concerning the human remains and/or funerary objects. It also includes the archaeological literature and specific archaeological studies/actions, such as radiocarbon dating.[121]
- *Cultural Anthropology Evidence* means information derived from any cultural related studies, folklore, and ethnography.
- *Biological Evidence* means information derived from any biological related studies, including morphological/physical anthropology assessments, dental analysis, determining the MNI, and DNA testing.

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[117] 25 U.S.C. 3005(a)(4).

[118] *Id.*

[119] Often, the geographic location of the recovery site is provided at the county and state level–or at a minimum the state is provided. If evidence for the recovery site is not provided, it is considered unknown.

[120] This evidence type is the most commonly cited, and has been used for each decision. An expert is defined broadly as:
One who is knowledgeable in specialized field, that knowledge being obtained from either education or personal experience. . . . One who by reason of education or special experience has knowledge respecting a subject matter about which persons having no particular training are incapable of forming an accurate opinion or making a correct deduction. . . . One who by habits of life and business has peculiar skill in forming opinion on subject in dispute.
See BLACK'S LAW DICTIONARY 578 (6th ed. 1990).

[121] Burial Practice and Artifact Identification evidence do not necessarily constitute Archaeological evidence because both categories can also fall within Cultural Anthropology, Historical, Biological, and Religion evidence types. For this reason, Burial Practice and Artifact Identification evidence form separate categories.

- *Artifact Analysis Evidence* means information derived from the identification or analysis of any cultural artifacts, including those from the recovery site of the human remains and/or funerary objects.[122]

- *Burial Practice Evidence* means any information derived from the analysis or observation of burial practices associated with the recovery site and/or treatment of the human remains.[123]

- *Historical Evidence* means information derived from historical studies, including any historical accounts and sources.

- *Documentary Evidence* means information derived from documents, particularly museum accession records and collection notes as well as maps and court related records.

- *Linguistic Evidence* means information derived from linguistic studies and records.

- *Religion Evidence* means information derived from religious studies and practices associated with the recovered human remains and/or funerary objects.

- *Oral Tradition Evidence* means information derived from oral tradition or oral history provided by Native Americans.

- *Genealogical Evidence* means information derived from genealogical and traditional kinship data.[124]

Another difficulty in recording this information is the Inventory Notices do not report evidence type usage in a uniform manner. Some NAGPRA Entities specifically documented the evidence they relied on. Others only infer certain evidence types underlying their decisions were used. Often the Notice descriptions are mixed, specifically identifying some of the evidence types and hinting that others were part of the decision. To address this issue, the specifically enumerated evidence category types and those reasonably inferred from NAGPRA Entity actions (including staff and

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[122] The recognition that an item is "Native American," a status required by the Act for all human remains and funerary objects, does not necessarily require specialized knowledge. Artifact Identification evidence could fall under Archaeological, Cultural Anthropology, Historical, Religion, and Expert Opinion evidence. For this reason, Artifact Identification forms its own evidentiary category unless it is specifically tied to another evidence type.

[123] The identification of a burial practice (scaffold burial, cremations, known historical Native American Christian cemetery, etc.) as being "Native American," a status required by the Act for all human remains and funerary objects, does not necessarily require specialized knowledge. Burial Practice evidence could fall under Archaeological, Cultural Anthropology, Historical, Biological Anthropology, Religion, and Expert Opinion. For this reason, Burial Practice forms its own category of evidence unless it is specifically tied to another evidence type.

[124] *See also* 43 C.F.R. §10.14

expert consultant activities) used to make the repatriation and disposition decisions were recorded.

6. Chronological Information[125]

NAGPRA Entities did not provide chronological information in their repatriation and disposition decisions uniformly. Rather, they relied on approximations, archaeological defined cultures, radiocarbon dates, and historic date ranges. For instance, decisions often will state that human remains and funerary objects are "Puebloan,"[126] are from the "16th Century,"[127] are approximately "700 years old,"[128] or are "Mississippian."[129] To systematically gather temporal data about the human remains and funerary objects, this article developed the following broad, standardized chronological table that fits the scope of information contained in the Inventory Notices:[130]

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[125] The commonly understood Anno Domini ("A.D.") and Before Christ ("B.C.") standard are used in this article instead of the Common Era ("CE") and Before Common Era ("BCE") standard, which retain the same numeric values, and the Before Present ("BP") standard, which measures time before the January 1, 1950 date of "Present" (e.g., 1600 BP is 1,600 years before January 1, 1950–or 350 A.D.).

[126] Notice of Inventory Completion: Denver Museum of Nature & Science, Denver, CO. 73 Fed. Reg. 20939 (Apr. 17, 2008).

[127] Notice of Inventory Completion: Robert S. Peabody Museum of Archaeology, Phillips Academy, Andover, MA , 73 Fed. Reg. 30969 (May 25, 2008).

[128] Notice of Inventory Completion: Alutiiq Museum and Archaeological Repository, Kodiak, AK , 72 Fed. Reg. 41521 (July 30, 2007).

[129] Notice of Inventory Completion: Arkansas State University Museum, Jonesboro, AR, 78 Fed. Reg. 5202 (Jan. 24, 2013).

[130] *See* BRIAN M. FAGAN, ANCIENT NORTH AMERICA: THE ARCHAEOLOGY OF A CONTINENT 48-52, 70, 116, 166, 214, 370 (4th ed. 2005) (citing GORDON R. WILLEY AND PHILIP PHILLIPS, METHOD AND THEORY IN AMERICAN ARCHAEOLOGY (1958). The table is based primarily on a general archaeological cultural chronology of North America rather than geographically localized or specific cultures, which would be ungainly.

Present	1900 A.D.–1950 A.D.	Arrival of and sustained contact with Europeans, including significant changes to Indigenous cultures.
Middle European	1700 A.D.–1899 A.D.	
Early European	1500 A.D.–1699 A.D.	
Late Formative	1000 A.D.–1499 A.D.	Formative cultures hunted and gathered, with geographic dependent agriculture and sedentism.
Middle Formative	1 A.D.–999 A.D.	
Early Formative	1,000 B.C.–1 B.C.	
Late Archaic	4,000 B.C.–1,001 B.C.	Archaic cultures continued hunting and gathering with increased specialization.
Middle Archaic	6,000 B.C.–4,001 B.C.	
Early Archaic	9,000 B.C.–6,001 B.C.	
Paleo-Indian	Older than 9,000 B.C.	Earliest Native American inhabitants.
Unknown	Chronological information is not available	

To impose order on the chronological information included in the Inventory Notices and obtain greater insight into the implementation of NAGPRA, the broad-brushed table became a tool of necessity. The chronological categories and brief cultural descriptions constitute a general organizational guide and are not intended to precisely portray the vast diversity of Native American cultures in the United States. It is broadly

accepted within the field of archaeology that chronological categories of cultural stages, such as the ones used in this article, do not accurately capture the complexity of the archaeological record and the associated cultures.[131] Moreover, dating human remains to one of the "European" chronological categories does not necessarily mean that Europeans had yet arrived in the specific geographic area where the individual lived and died.

The large number of cultural materials and scale of temporal data included in the Notices precluded recording chronological information for every set of human remains and funerary objects. Instead, the study collected this information in the form of a chronological range, reporting the most recent and oldest dates for the entire set of cultural materials included in the Notices at the decision level. Human remains and funerary objects were only listed as "unknown" if the decision completely lacked chronological information. While this method and the general chronological table have limitations, they afford the first and most reasonable means to explore the temporal profile of the human remains and funerary objects published in the Inventory Notices.

If the human remains and funerary objects spanned more than one timeframe category, the study reported the full date range. For instance, if a repatriation decision includes 10 sets of remains, with five being from the "Late Archaic" period and the other five from the "18th Century," then the reasonable range for all of the human remains would be 4,000 B.C. to 1799 AD. Also, various archaeological literature sources were consulted to translate chronological data provided in the form of archaeological cultures, such as Woodland, Hohokam, and Dorset.[132]

After the initial analysis, the scale of the chronological information proved too unwieldy for the scope of this paper and the data were further collapsed into the following simplified table:

AD = 1 A.D.–1950 A.D.
B.C. = 14,000 B.C.–1 B.C.
B.C.-AD = 14,000 B.C.–1499 A.D.
Overbroad = 1 B.C.–1500 A.D.
Unknown = No Chronological Information

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[131] *See id.* For instance, the idea of a pan-Archaic period, in terms of behavior, geography, and chronology, has fallen into disuse. *See* Kenneth E. Sassaman, *The New Archaic, It Ain't What It Used To Be*, in 8 SAA ARCHAEOLOGICAL REC. 6-8 (Nov. 2008).

[132] The principal source for interpreting archaeological culture-based chronological information is Brian Fagan's Ancient North America: The Archaeology of a Continent 48-62 (4th Ed. Thames & Hudson, Inc., 2005). Additional books and peer-reviewed publications were used when necessary. Citations were included on the summary templates of the Notice decisions that were produced for this study.

The A.D. category includes all human remains and funerary objects with chronological information dating from 1 A.D. to 1950 A.D. Cultural materials were considered B.C. if they fell between 14,000 B.C. and 1 B.C. B.C.-A.D. includes any materials from B.C. to just before the arrival of Europeans. Overbroad is anything between B.C. and the arrival of Europeans (e.g., 6000 B.C.–1699 A.D.). Cultural materials lacking chronological information are categorized as "unknown." While the collapsed table loses even more detail, it provides the only insight available into the chronology of human remains and funerary objects undergoing repatriation and disposition through NAGPRA.

7. Recipients of repatriation and disposition decisions

Like "Native Consultants," the cultural affiliates and recipients of cultural affiliation and disposition decisions, often found to be culturally related in some manner, include federally recognized Indian Tribes, Native Hawaiian Organizations, lineal descendants, non-federally recognized Indian groups, and non-NAGPRA recognized Native Hawaiian groups. The Alaska Native Corporations were tracked as non-federally recognized Indian groups and under the separate category of Alaska Native Corporations. Recipients also were identified and counted at the individual Tribe level rather than being lumped into consortiums or separated out at the band level.

VI. STATISTICAL ANALYSES

A. Baseline Data—Repatriation and Disposition Decisions

The NAGPRA repatriation and disposition provisions can be summarized into the following broad steps: 1) identify the human remains and funerary objects in the federal agency or museum collection; 2) consult Native Americans about the collection; 3) evaluate the evidence; 4) determine affiliation claims; and 5) publish the decision. These steps generate quantifiable data—including the number of human remains, funerary objects, consultants, types of evidence categories, and cultural affiliates—providing baseline information for understanding how NAGPRA is being implemented and for sharpening arguments to address any perceived shortcomings.

The data source for this study includes all 1,610 Notices of Inventory Completion and their 152 Corrections, which modified them to varying degrees, published in the *Federal Register* from 1992 to the close of 2013. As previously explained, Inventory Notices do not always represent single

repatriation or disposition decisions. Data collection and analysis, therefore, were conducted at the decision level for each publishing entity. As a result, there were 1,666 decisions made during this timeframe—as derived from the 1,610 Notices—that include 48,745 sets of human remains and 1,175,985 funerary objects.[133]

Table 1: Notices of Inventory Completion Published by Year of the Combined Repatriation and Disposition Decisions, 1992–2013

Publication Year	**No. of Decisions**	**No. of Human Remains ($\bar{x}$)**	**No. of Funerary Objects ($\bar{x}$)**
1992	4	22 (5.5)	72,275 (18,068.75)
1993	9	36 (4)	43 (4.78)
1994	13	1,847 (142.08)	299 (23)
1995	25	1,340 (53.60)	51,722 (2,068.88)
1996	76	2,659 (34.99)	119,611 (1573.83)
1997	81	4,097 (50.58)	58,037 (716.51)
1998	73	4,730 (64.79)	33,655 (461.03)
1999	72	4,420 (61.39)	37,526 (521.19)
2000	118	4,048 (34.31)	128,026 (1,084.97)
2001	143	1,451 (10.15)	53,363 (373.17)
2002	67	2,139 (31.93)	21,981 (328.07)
2003	72	1,086 (15.08)	37,113 (515.46)
2004	67	2,105 (31.42)	9,812 (146.45)
2005	58	1,435 (24.74)	55,859 (963.09)
2006	61	1,365 (22.38)	32,316 (529.77)
2007	73	722 (9.89)	22,013 (301.55)
2008	142	4,425 (31.16)	107,441 (756.63)
2009	121	1,714 (14.17)	206,144 (1,703.67)
2010	89	1,436 (16.13)	7,909 (88.87)
2011	92	2,678 (29.11)	12,703 (138.08)
2012	108	3,475 (32.18)	92,729 (858.60)
2013	102	1,515 (14.85)	15,408 (151.06)
Total	**1,666**	**48,745 (29.26)**	**1,175,985 (705.87)**

The culturally unidentifiable determinations encompass 188 Notices with 190 disposition decisions that describe 4,964 human remains and 8,363 funerary objects. Of these Notices, Federal agencies issued 39 decisions representing 400 human remains and 575 funerary objects. Museums made the majority of the culturally unidentifiable findings, issuing 151

[133] *See supra* Table 1.

disposition decisions that included 4,564 human remains and 7,788 funerary objects.[134]

Table 2: Culturally Unidentifiable Disposition Decisions by Federal Agency and Museum, 1992–2013

Institution	No. of Disposition Decisions (% of total Decisions)	No. of Human Remains ($\bar{x}$; % of total Hunan Remains)	No. of Funerary Objects ($\bar{x}$; % of total Funerary Objects)
Federal Agency	39 (2%)	400 (10.26; 0.8%)	575 (14.74; .04%)
Museum	151 (9%)	4,564 (30.23; 9%)	7,788.00 (51.58; 0.7%)
Total	**190 (11%)**	**4,964 (26.13; 10%)**	**8,363 (44.02; 1%)**

Table 3: Descriptive Statistics for the Culturally Unidentifiable Disposition Decisions by Federal Agency and Museum, 1992–2013

Institution	N	Human Remains ($\bar{x}$)	Funerary Objects ($\bar{x}$)	Consul-tants ($\bar{x}$)	Consultant % Single (S) / Multiple (M)	Evidence Types ($\bar{x}$)	Dispo-sition Recip-ients ($\bar{x}$)	Recipient % Single (S) / Multiple (M)
Federal Agency	39	400 (10.26)	575 (14.74)	836 (21.44)	S. 0 / M. 100%	197 (5.05)	304 (7.79)	S. 23 % / M. 77%
Museum	151	4,564 (30.23)	7,788 (51.58)	2,843 (18.83)	S. 8% / M. 91%	774 (5.13)	1,318 (8.73)	S. 31% / M. 66%
Total	**190**	**4,964 (26.13)**	**8,363 (44.02)**	**3,679 (19.36)**	**S. 6% / M. 93%**	**971 (5.11)**	**1,622 (8.54)**	**S. 30% / M. 68%**

Note: One Museum decision had no consultation (N = 1; 0.7%) and four Museum cultural unidentifiable decisions were regional reburials that did not specifically identify Native recipients for disposition (N = 4; 3%).

Cultural affiliation, comprising 1,422 Notices with 1,476 decisions that include 43,799 human remains and 1,165,838 funerary objects, accounts for the vast majority of the NAGPRA repatriation workload.[135] Federal

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[134] *See supra* Tables 2 and 3.

[135] Disposition decisions that only affiliated non-federally recognized Indian recipient groups were lumped with the repatriation decisions. Although the Act and implementing regulations treat them as being culturally unidentifiable, these decisions are the same as repatriation determinations for federally-recognized Indian Tribes. *See*, discussions in the *Disposition* and *Data Collection* sections of this paper. Between 1992-2013, museums

agencies made 375 decisions, which included 17,017 human remains and 217,070 funerary objects. Museums issued 1,101 decisions, enumerating 26,782 human remains and 948,768 funerary objects.[136]

Table 4: Repatriation Decisions by Federal Agency and Museum, 1992–2013

Institution	No. of Affiliation Decisions (% of total Decisions)	No. of Human Remains ($\bar{x}$; % of total Human Remains)	No. of Funerary Objects ($\bar{x}$; % of total Funerary Objects)
Federal Agency	375 (23%)	17,017 (45.38; 35%)	217,070 (578.85; 18%)
Museum	1,101 (66%)	26,782 (24.33; 55%)	948,768 (861.73; 81%)
Total	**1,476 (89%)**	**43,799 (29.67; 90%)**	**1,165,838 (789.86; 99%)**

Table 5: Descriptive Statistics for Repatriation Decisions by Federal Agency and Museum, 1992–2013

Institution	N	Human Remains ($\bar{x}$)	Funerary Objects ($\bar{x}$)	Consul-tants ($\bar{x}$)	Consultant % Single (S)/Multiple (M)	Evidence Types ($\bar{x}$)	Affiliate ($\bar{x}$)	Affiliate % Single (S) / Multiple (M)
Federal Agency	375	17,017 (45.38)	217,070 (578.85)	2,837 (7.57)	S. 28% / M. 72%	2,458 (6.55)	1,489 (3.97)	S. 43% / M. 57%
Museum	1,101	26,782 (24.33)	948,768 (861.73)	5,991 (5.44)	S. 34% / M. 66%	6,591 (5.99)	4,085 (3.71)	S. 48 % / M. 52%
Total	**1,476**	**43,799 (29.67)**	**1,165,838 (789.86)**	**8,828 (5.98)**	**S. 33% / M. 67%**	**9,049 (6.13)**	**5,574 (3.78)**	**S. 47% / M. 53%**

Note: Two museum decisions were made without consultation (N = 2; 0.2%)

issued 12 cultural affiliation decisions for non-federally recognized Indian groups, which included 227 human remains and 115 funerary objects. Federal agencies did not publish any decisions that solely affiliated cultural materials to non-federally recognized Indian groups. Rather, these groups were included in affiliation decisions alongside federally recognized Indian Tribes.

[136] *See supra* Tables 4 and 5.

B. Evaluating Repatriation Decisions

To assess the various NAGPRA compliance concerns surrounding consultation sufficiency, evidence usage, and cultural affiliation standards as well as the nature of the conveyed remains and funerary objects, this study now drills down into the decisions for a look at the data derived from the procedural mechanics of the Act. The focus of these analyses will be on the repatriation data, which make up the bulk of the NAGPRA decisions, but also will address disposition data when comparisons are illustrative.[137]

This section addresses two primary questions: 1) How do federal agencies and museums use consultation, evidence types, and the nature of the human remains and funerary objects in their collections to make repatriation decisions? and 2) Are there differences between federal agency and museum repatriation decisions? In addition, comparisons between repatriating institution subgroups, differences in the geography and chronology of human remains, and the connection between number of human remains and funerary objects repatriated, consultants, evidence types, and chronological information were explored. When necessary, independent sample t tests and chi-square tests were used to evaluate the significance between the various federal agency and museum findings.

C. Components of Repatriation Decision-Making

Table 5 presents data for the key components of repatriation decision-making: 1) number of Native American human remains; 2) number of funerary objects; 3) number of Native American consultants; 4) percent of single vs. multiple consultants; 5) number of evidence types used; 6) number of cultural affiliates determined; and 7) the percentage of decisions that yielded single vs. multiple cultural affiliates. The number of Native American human remains and funerary objects embody the primary subject of all repatriation decisions. Their presence in a federal agency or museum collection initiates the NAGPRA repatriation process, guides Native consultation, informs evidence gathering, and is the essence of cultural affiliation decision-making. The number of consultants is the amount of Native Americans (Indian Tribes, Native Hawaiian Organizations, Lineal Descendants, etc.) engaged by the repatriating institution. Consultation type concerns whether a single Native American entity or multiple Native American entities were consulted. The number of evidence types indicates how many evidence categories were used in repatriation decisions. The number of cultural affiliates is the quantity of Native Americans found to be

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[137] *See supra* Tables 2 and 4.

culturally affiliated and affiliation type provides whether a single affiliate or multiple affiliates were determined.

D. Findings: Combined Repatriation Decisions

The combined federal agency and museum figures indicate the average repatriation decision during the 1992–2013 timeframe resulted in the cultural affiliation of almost 30 human remains (29.67) and 790 (789.86) funerary objects. Most decisions used multiple Native American consultants (67%), averaging about 6 (5.98) per case. The decisions also relied on around 6 (6.13) evidence types, resulting in almost 4 (3.78) Native cultural affiliates on average with a slight majority (53%) comprising multiple affiliate determinations.[138]

E. Parsing Federal Agency and Museum Repatriation Decisions

Table 5 also provides separate data about the federal agency and museum repatriation decisions during the same period. At just over 45 (45.38), federal agencies on average had more human remains per decision than the museum average of about 24 (24.33). Museums, however, averaged more funerary objects per decision at 861 (861.73) than federal agencies at 578 (578.85). Federal agencies engaged Native consultants with greater frequency, using multiple Native consultants in 72% of its decisions and averaging over seven (7.57) per determination. In contrast, museums used more than one consultant 66% of the time and averaged just over five (5.44). On average, federal agencies from 1992–2013 consulted with about two (2.13) more Native Americans per NAGPRA cultural affiliation decision than museums.[139] There appears, however, to be no statistically significant difference between federal agencies and museums engaging multiple Native consultants by federal agencies and museums.[140]

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[138] *See supra* Table 5.

[139] An independent samples t-test was conducted to compare the number of Native American consultants federal agencies and museums relied on when making their NAGPRA cultural affiliation decisions from 1992-2013. There is a significant difference in the numbers for federal agency consultants ($\bar{x}$ = 7.57, SD = 8.85) and Museum consultants ($\bar{x}$ = 5.44, SD = 6.72); t(528.51) = 4.25, p = .000 two-tailed). These results suggest federal agencies engage more Native consultants than museums when making NAGPRA affiliation decisions. The difference between the means is 2.13.

[140] A chi-square test for independence indicated no significant difference between the proportion of federal agency multiple Native consultant decisions and the proportion of museum multiple Native consultant decisions, x^2 (1, n = 1,476), p = .091, *phi* = .06. This result suggests there is no statistically significant association between using multiple Native consultants and the NAGPRA decision-making institution; that is, both federal agencies and

F. Findings: Number of Evidence Types Used

The number of evidence types used in the findings narrowed for both institution types, with federal agencies relying on almost 7 (6.55) and museums about 6 (5.99) per decision. While federal agencies employed more evidence types on average than museums, the difference was less than one (0.56).[141] The number of determined cultural affiliates is even closer, with federal agencies and museums identifying almost four Native affiliates per decision (3.97 and 3.78, respectfully).[142] The institutions appear to have diverged again over the percent of multiple cultural affiliates per decision, with 57% of federal agency determinations having multiple affiliates and museums accounting for 52% of this decision type. The difference, however, is not significant.[143]

G. Findings: Individual Evidence Types Used

Table 6 provides more detailed evidence type data, which presents the percentages of the specific evidence types federal agencies and museums relied on to support their affiliation decisions. Federal agencies and museums used several evidence types similarly, but diverged on most others. Expert Opinion evidence is used by federal agencies and museums in all of their decisions equally and Geographic evidence is included almost

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museums equally decide to use multiple Native American consultants.

[141] An independent samples t-test was performed to compare the number of evidence types federal agencies and museums used in their NAGPRA affiliation decisions from 1992-2013. There is a significant difference in the numbers of for Federal Agency evidence types ($\bar{x}$ = 6.55, SD = .08) and Museum evidence types ($\bar{x}$ = 5.99, SD = .05); t(1474) = 5.63, p = .000 two-tailed). These results suggest federal agencies used more evidence types than museums in their NAGPRA affiliation decisions. The difference between the averages (means), however, is only .56.

[142] An independent samples t-test was performed to compare the number of Native American cultural affiliates federal agencies and museums identified in their NAGPRA affiliation decisions from 1992-2013. There is no significant difference in the numbers of Federal Agency affiliates ($\bar{x}$ = 3.97, SD = 4.55) and Museum affiliates ($\bar{x}$ =3.71, SD = 4.98); t(1474) = .89, p = .372 two-tailed). These results suggest federal agencies and museums identify about the same number of cultural affiliates for their NAGPRA affiliation decisions. The difference between the averages (means) is only 0.26.

[143] A chi-square test for independence indicated no significant difference between the proportion of federal agency multiple cultural affiliate decisions and the proportion of museum multiple cultural affiliate decisions, x^2 (1, n = 1,476), p = .104, *phi* = .04. This result suggests there is no statistically significant association between multiple cultural affiliate determinations and the NAGPRA decision-making institution; that is, both federal agencies and museums equally determine human remains and funerary objects are culturally affiliated with multiple Native American entities.

as frequently. Notable differences occurred between the application of Archaeology, Cultural, Artifact Analysis, Historical, Documentary, and Oral Tradition evidence types. Federal agency decisions were more likely to include Archaeological (83% of the time compared to 60% for museums),[144] Cultural (41% to 24% for museums),[145] Artifact Analysis (73% to 53% for museums),[146] and Oral Tradition[147] (52% to 31% for museums)[148] evidence types. Museum decisions were more likely to use Historical (63% of the time compared to 57% for federal agencies)[149] and Documentary (53% to 29% for federal agencies)[150] evidence types.[151]

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[144] Federal agencies used Archaeological evidence significantly more often than museums did when deciding NAGPRA cultural affiliation cases from 1992-2013, x^2 (1, n = 1,476), p = 0.000, *phi* = -0.21.

[145] Federal agencies used Cultural evidence significantly more often than museums did when deciding NAGPRA cultural affiliation cases from 1992-2013, x^2 (1, n = 1,476), p = 0.000, *phi* = -0.16.

[146] Federal agencies used Artifact Analysis evidence significantly more often than museums did when deciding NAGPRA cultural affiliation cases from 1992-2013, x^2 (1, n = 1,476), p = 0.000, *phi* = -0.18.

[147] When considering cultural affiliation and disposition decisions, federal agencies and museums used oral tradition evidence in conjunction with archaeological, biological, artifact analysis, historical, and other forms of evidence. This study found no decision solely relied on oral tradition evidence, nor used it to tip the scales in favor of finding affiliation.

[148] Federal agencies used Oral Tradition evidence significantly more often than museums did when deciding NAGPRA cultural affiliation cases from 1992-2013, x^2 (1, n = 1,476), p = 0.000, *phi* = -0.19.

[149] Museums used Historical evidence significantly more often than federal agencies did when deciding NAGPRA cultural affiliation cases from 1992-2013, x^2 (1, n = 1,476), p = 0.02, *phi* = 0.06.

[150] Museums used Documentary evidence significantly more often than federal agencies did when deciding NAGPRA cultural affiliation cases from 1992-2013, x^2 (1, n = 1,476), p = 0.000, *phi* = 0.22.

[151] *See supra* Table 6.

Table 6: Evidence Types Used in Repatriation Decisions, 1992–2013

Evidence Type	**Federal Agency**	**N (N/375)**	**Museum**	**N (N/1,101)**
Geographic	99%	373	98%	1,087
Expert Opinion	100%	375	100%	1,101
Archaeological	83%	310	60%	664
Cultural	41%	152	24%	261
Biological	75%	282	79%	864
Artifact Analysis	73%	272	53%	579
Burial Practice	25%	95	21%	236
Historical	57%	212	63%	698
Documentary	29%	107	53%	588
Linguistic	15%	55	13%	143
Religious	5%	20	2%	20
Oral Tradition	52%	193	31%	336
Genealogical	3%	11	1%	13

In contrast, Table 7 includes the percentages of evidence types federal agencies and museums used to make their disposition decisions. Here, federal agencies were more likely to use Archaeological (67% to 55% for museums), Cultural (10% to 3% for museums), Artifact Analysis (41% to 33% for museums), and Historical (23% to 15% for museums) evidence categories in their disposition decisions. Museum disposition cases were more likely to rely on Burial Practice (15% to 3% for federal agencies), Documentary (80% to 62% for federal agencies), and Oral Tradition (12% to 5% for federal agencies).

Table 7: Evidence Types Used in Disposition Decisions, 1992–2013

Evidence Type	Federal Agency	N (N/39)	Museum	N (N/151)
Geographic	95%	37	98%	148
Expert Opinion	100%	39	100%	151
Archaeological	67%	26	55%	83
Cultural	10%	4	3%	4
Biological	97%	38	99%	149
Artifact Analysis	41%	16	33%	50
Burial Practice	3%	1	15%	22
Historical	23%	9	15%	23
Documentary	62%	24	80%	120
Linguistic	3%	1	3%	4
Religious	0	0	1%	2
Oral Tradition	5%	2	12%	18
Genealogical	0	0	0	0

H. Findings: Chronology

Table 8 provides a rough chronology for the number of Native American human remains and funerary objects federal agencies and museums culturally affiliated from 1992–2013. The overwhelming majority of the remains and objects date to the A.D. timeframe (1 A.D.–1950 A.D.). The bulk of federal agency decisions (288 or 76% of the repatriation determinations) were A.D., accounting for 13,643 human remains (or 80% of the federal agency remains) and 168,449 funerary objects (or 78% of the federal agency funerary objects). Likewise, most museum decisions (683 or 62% of the repatriation determinations) were A.D., totaling 16,900 human remains (or 63% of Museum remains) and 844,637 funerary objects (or 89% of museum funerary objects). Federal agencies engaged more consultants in the decision-making process for human remains and funerary object from the A.D. period, averaging just over 8 (8.21) compared to the museum average of almost 6 (5.59). There also are differences in the percentage of single versus multiple consultant type and affiliation type decisions for the A.D. timeframe. Federal agency decisions were more likely to be made with multiple consultants (74%) and to be affiliated with multiple cultural affiliates (59%) compared to museum multiple consultant (67%) and multiple affiliate (49%) decision numbers. Federal agencies and museums used, on average, over 6 evidence types and identified 3–4 cultural affiliates for the A.D. human remains and funerary objects.[152]

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[152] *See supra* Table 8.

The least number of culturally affiliated human remains and funerary objects are from the B.C. timeframe (14,000 B.C.–1 B.C.). Federal agencies only made four B.C. only decisions (or 1% of the affiliation determinations), which included 110 human remains and 1,756 funerary objects. Museums had more B.C. decisions with 10, but these only included 22 human remains and 38 funerary objects. Differences exist between the federal agency and museum process for deciding B.C. affiliation. For example, museums averaged more consultants (5.10) than federal agencies (3.7), but the low decision numbers make it difficult to draw firm conclusions.

Both institution types also culturally affiliated human remains and funerary objects from the murkier, more challenging temporal timeframes. One is B.C.–A.D., which runs from 14,000 B.C.–1499 A.D.—or up to the approximate beginning of sustained European contact. Only 2% of the decisions for both institution types were B.C.–A.D.—10 for federal agencies representing 505 human remains and 6,062 funerary objects and 24 for museums representing 1,499 human remains and 14,149 funerary objects. Interestingly, federal agencies (at 12.80) and museums (at 10.25) averaged more consultants for decisions dating to the B.C.-A.D. period than any other chronological timeframe.

The other category is titled Overbroad and comprises vague chronological references from federal agency and museum decisions (e.g., a recovery site reported as dating from 10,000 B.C. to the early Twentieth Century). The broad ranges often span the entirety of the 14,000 B.C.–1950 A.D. archaeological record. Like the B.C.-A.D. timeframe, the Overbroad period only constitutes a small percentage of the institutions' decisions—6% (or 22) for federal agencies representing 600 human remains and 35,562 funerary objects and 5% (or 52) for museums representing 3,222 human remains and 41,750 funerary objects. The most compelling difference is museum Overbroad decisions averaged more affiliates (6.60) per decision than federal agencies (2.86). In many ways, the Overbroad category's unwieldy chronological scope is equivalent to the Unknown category. That is, neither provides useful chronological context for the culturally affiliated remains and objects.

The Unknown category, however, does provide insight into the decision-making process in that both federal agencies and museums made numerous affiliation decisions without any chronological context. Federal agencies made 51 (or 14%) of their affiliation decisions without temporal information, which represented 2,159 human remains and 5,241 funerary objects. Museums made 332 (or 30%) of their affiliation decisions with no

chronological data, representing 5,189 human remains and 48,194 funerary objects.[153]

Table 8: Chronology of Native American Human Remains and Funerary Objects by Federal Agency and Museum Culturally Affiliated Repatriation Decisions, 1992–2013

Institution & Chronology	Decision N & %	Human Remains (x̄)	Funerary Objects (x̄)	Consul-tants (x̄)	Consultant % Single (S)/ Multiple (M)	Evidence Types (x̄)	Affiliate (x̄)	Affiliate % Single (S) /Multiple (M)
Federal Agency								
AD	288 (76%)	13,643 (47.37)	168,449 (584.89)	2,364 (8.21)	S. 26% / M. 74%	1,914 (6.65)	1,185 (4.11)	S. 41% / M. 59%
B.C.	4 (1%)	110 (27.50)	1,756 (439.00)	15 (3.7)	S. 25% / M. 75%	25 (6.25)	14 (3.50)	S. 50% / M. 50%
B.C.-A.D.	10 (2%)	505 (50.50)	6,062 (606.20)	128 (12.80)	S. 10% / M. 90%	72 (7.20)	78 (7.80)	S. 50% / M. 50%
Overbroad	22 (6%)	600 (27.27)	35,562 (1,616.45)	122 (5.55)	S. 36%/ M. 64%	156 (7.09)	63 (2.86)	S. 55% / M. 45%
Unknown	51 (14%)	2,159 (42.33)	5,241 (102.76)	208 (4.08)	S. 43% / M. 57%	291 (5.71)	149 (2.92)	S. 53% / M. 47 %
Total	**375**	**17,017 (45.38)**	**217,070 (578.85)**	**2,837 (7.57)**	**S. 28% / M. 72%**	**2,458 (6.55)**	**1,489 (3.97)**	**S. 43% / M. 57%**
Museum								
AD	683 (62%)	16,900 (24.74)	844,637 (1,236.66)	3,818 (5.59)	S. 33% / M. 67%	4,322 (6.33)	2,361 (3.46)	S. 51% / M. 49%
B.C.	10 (1%)	22 (2.20)	38 (3.80)	51 (5.10)	S. 0 / M. 100%	57 (5.70)	47 (4.70)	S. 20% / M. 80%
B.C.-A.D.	24 (2%)	1,449 (60.38)	14,149 (589.54)	246 (10.25)	S. 12% / M. 88%	169 (7.04)	194 (8.08)	S. 17% / M. 83%
Overbroad	52 (5%)	3,222 (61.96)	41,750 (802.88)	366 (7.04)	S. 29% / M. 71%	377 (7.25)	343 (6.60)	S. 35% / M. 65%
Unknown	332 (30%)	5,189 (15.63)	48,194 (145.16)	1,510 (4.55)	S. 40% / M. 60%	1,666 (5.02)	1,140 (3.43)	S. 48% / M. 52%
Total	**1,101**	**26,782 (24.33)**	**948,768 (861.73)**	**5,991 (5.44)**	**S. 34% / M. 66%**	**6,591 (5.99)**	**4,085 (3.71)**	**S. 48 % / M. 52%**

Note: One museum made an A.D. decision without consultation (N = 1; 0.1%) and an Unknown decision without consultation (N = 1; 0.3%).

[153] *See supra* Table 8.

For comparison, Table 9 includes the counterpart chronology for the culturally unidentifiable disposition decisions. Interestingly, both federal agencies and museums determined human remains and funerary objects were culturally unidentifiable despite possessing basic chronological information, having numerous consultants for each chronological category, and averaging at least five evidence types. Another compelling insight Table 9 reveals is the whereabouts of museum B.C. period cultural materials—seven decisions with 165 human remains and 514 funerary objects that averaged over six evidence types per determination.

Table 9: Chronology of Native American Human Remains and Funerary Objects by Federal Agency and Museum Culturally Unidentifiable Disposition Decisions, 1992–2013

Institution & Chronology	Decision N & %	Human Remains ($\bar{x}$)	Funerary Objects ($\bar{x}$)	Consul-tants ($\bar{x}$)	Consultant % Single (S)/ Multiple (M)	Evi-dence Types ($\bar{x}$)	Recip-ient (x)	Recipient % Single (S) / Multiple (M)
Federal Agency								
A.D.	13 (33%)	239 (18.38)	386 (29.69)	303 (23.31)	S. 0 / M. 100%	69 (5.31)	91 (7.00)	S. 31% / M. 69%
B.C.	1 (2%)	1 (1.00)	24 (24.00)	13 (13.00)	S. 0 / M. 100%	6 (6.00)	1 (1.00)	S. 100% / M. 0
B.C.-A.D.	5 (13%)	38 (7.60)	7 (1.40)	69 (13.80)	S. 0 / M. 100%	27 (5.40)	43 (8.60)	S. 0 / M. 100%
Overbroad	3 (8%)	23 (7.67)	60 (20.00)	30 (10.00)	S. 0 / M. 100%	18 (6.00)	13 (4.33)	S. 33% / M. 67%
Unknown	17 (44%)	99 (5.82)	98 (5.76)	421 (24.76)	S. 0 / M. 100%	77 (4.53)	156 (9.18)	S. 18% / M. 82%
Total	**39**	**400 (10.26)**	**575 (14.74)**	**836 (21.44)**	**S. 0 / M. 100%**	**197 (5.05)**	**304 (7.79)**	**S. 23 % / M. 77%**
Museum								
A.D.	33 (22%)	1,072 (32.48)	1,402 (42.48)	422 (12.79)	S. 15% / M. 85%	191 (5.79)	240 (7.27)	S. 45% / M. 49%
B.C.	7 (5%)	165 (23.57)	514 (73.43)	115 (16.43)	S. 0 / M. 100%	43 (6.14)	44 (6.29)	S. 29% / M. 71%
B.C.-A.D.	9 (6%)	1,620 (180.00)	637 (70.78)	211 (23.44)	S. 0 / M. 100%	51 (5.67)	76 (8.44)	S. 22% / M. 67%
Overbroad	17 (11%)	847 (49.82)	416 (24.47)	265 (15.59)	S. 6% / M. 94%	107 (6.29)	168 (9.88)	S. 24% / M. 70%

Unknown	85 (56%)	860 (10.12)	4,819 (56.69)	1,830 (21.53)	S. 7% / M. 92%	382 (4.49)	790 (9.29)	S. 25% / M. 75%
Total	151	**4,564 (30.23)**	**7,788 (51.58)**	**2,843 (18.83)**	**S. 8% / M. 91%**	**774 (5.13)**	**1,318 (8.73)**	**S. 31% / M. 66%**

Note: A museum made an Unknown decision without consultation (N = 1; 1%); museums made five Cultural Reburial decisions (i.e., no disposition to specific recipients) on A.D. human remains and funerary objects (N = 2; 6%), one on B.C. (N = 1; 14%), one on B.C.-AD (N = 1; 11%), and one on Overbroad (N = 1; 6%).

I. Findings: Evidence Type Usage by Chronology

Table 10 delves deeper into the application of NAGPRA evidence, tracking federal agency and museum evidence type usage by chronology. Similar to Tables 6 and 7, geographic and expert opinion evidence is ubiquitous for federal agencies and museums in all chronological categories. The A.D. timeframe is the most prevalent source for repatriation decisions, with federal agencies reporting 288 out of 375 total decisions and museums 683 out of 1,101 from 1992–2013.[154] Compared to museums, federal agencies are more likely to rely on archaeological (f = 85%; m = 72%), cultural (f = 42%; m = 22%), artifact analysis (f = 77%; m = 66%), burial practice (f = 28%; m = 25%), and oral tradition (f = 55%; m = 35%) evidence for deciding the cultural affiliation of A.D. period human remains and funerary objects. In contrast, museums are more likely to use biological (f =70%; m = 76%), historical (f = 58%; m = 71%), and documentary (f = 27%; m = 49%) evidence for the same timeframe. The low decision numbers for the remaining federal agency chronological categories make it difficult to draw additional conclusions. It is, however, interesting that federal agencies had higher use percentages for archaeological (f = 61%; m = 27%), cultural (f = 33%; m = 26%), biological (f = 88%; m = 81%), artifact analysis (f = 35%; m = 18%), burial practice (f = 16%; m = 13%), and oral tradition (f = 45%; m = 18%) evidence types under the Unknown chronological field with the exception of historical (f= 39%; m = 47%) and documentary (f = 43%; m = 66%).[155]

[154] *See supra* Table 8.
[155] *See supra* Table 10.

Table 10: Evidence Type Use Percentage by Chronology for Federal Agency and Museum Repatriation Decisions, 1992–2013

Institution & Chronology	Geographic (%; x/N)	Expert Opinion (%; x/N)	Archaeo-logical (%; x/N)	Cultural (%; x/N)	Biological (%; x/N)	Artifact Analysis (%; x/N)	Burial Practice (%; x/N)
Federal Agency							
A.D.	99% (286/288)	100% (288/288)	85% (244/288)	42% (120/288)	70% (202/288)	77% (223/288)	28% (80/288)
B.C.	100% (4/4)	100% (4/4)	100% (4/4)	75% (3/4)	100% (4/4)	50% (2/4)	0
B.C.-A.D.	100% (10/10)	100% (10/10)	100% (10/10)	60% (6/10)	100% (10/10)	90% (9/10)	0
Overbroad	100% (22/22)	100% (22/22)	95% (21/22)	36% (8/22)	96% (21/22)	91% (20/22)	32% (7/22)
Unknown	100% (51/51)	100% (51/51)	61% (31/51)	33% (17/51)	88% (45/51)	35% (18/51)	16% (8/51)
Museum							
A.D.	99% (678/683)	100% (683/683)	72% (493/683)	22% (149/683)	76% (519/683)	66% (451/683)	25% (172/683)
B.C.	100% (10/10)	100% (10/10)	90% (9/10)	0	100% (10/10)	50% (5/10)	10% (1/10)
B.C.-A.D.	100% (24/24)	100% (24/24)	100% (24/24)	29% (7/24)	79% (19/24)	83% (20/24)	33% (8/24)
Overbroad	100% (52/52)	100% (52/52)	92% (48/52)	37% (19/52)	90% (47/52)	83% (43/52)	25% (13/52)
Unknown	97% (323/332)	100% (332/332)	27% (90/332)	26% (86 /332)	81% (269/332)	18% (60/332)	13% (42/332)

Institution & Chronology	Historical (%; x/N)	Documentary (%; x/N)	Linguistic (%; x/N)	Religious (%; x/N)	Oral Tradition (%;fx N)	Genealogical (%; x/N)
Federal Agency						
A.D.	58% (167/288)	27% (78/288)	14% (40/288)	7% (19/288)	55% (157/288)	3% (9/288)
B.C.	100% (4/4)	0	0	0	50% (2/4)	0
B.C.-A.D.	60% (6/10)	10% (1/10)	40% (4/10)	0	60% (6/10)	0
Overbroad	68% (15/22)	27% (6/22)	36% (8/22)	5% (1/22)	23% (5/22)	0

Unknown	39% (20/51)	43% (22/51)	6% (3/51)	0	45% (23/51)	4% (2/51)
Museum						
A.D.	71% (487/683)	49% (334/683)	13% (88/683)	3% (17/683)	35% (238/683)	2% (12/683)
B.C.	50% (5/10)	30% (3/10)	20% (2/10)	0	20% (2/10)	0
B.C.-A.D.	54% (13/24)	38% (9/24)	33% (8/24)	0	54% (13/24)	0
Overbroad	71% (37/52)	44% (23/52)	33% (17/52	2% (1/52)	46% (24/52)	2% (1/52)
Unknown	47% (156/332)	66% (219/332)	8% (28/332)	1% (2/332)	18% (59/332)	0

J. Findings: Geography and Chronology

To bring a geographic component into the analysis, Table 11 compares the number of human remains federal agencies and museums culturally affiliated by their recovery location and chronology. Most of the human remains are from the A.D. timeframe, which also have the greatest geographic diversity. Federal agencies recorded 13,631 individuals or 80% of all the remains they affiliated as being from the A.D. timeframe and museums reported 16,931 remains or 63% of the total they affiliated from the same chronological period. Geographically, 93% (12, 636) of the federal agency A.D. remains are from western states,[156] followed by 6% (808) from southern states,[157] 1% (119) from mid-west states,[158] and 0.4% (63) from north-east states.[159] Museum affiliated A.D. remains were more regionally diffused, with 47% (8,011) from the west,[160] 23% (3,913) from the mid-west,[161] 19% (3,181) from the south,[162] and 11% (1,783) from the north-east.[163] Both institution types recorded low numbers of A.D. human

[156] The Western states are AK, AZ, CA, CO, HI, ID, MT, ND, NM, NV, OR, SD, UT, WA, and WY. *See* Table 11.

[157] The Southern states are AL, AR, FL, GA, KY, LA, OK, SC, TN, and TX. *See* Table 11.

[158] The Midwestern states are IA, IL, KS, MN, MO, NE, and WI. *See* Table 11.

[159] The Northeastern states are MA, ME, NJ, NY, and PA. *See* Table 11.

[160] The Western states are AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA, and WY. *See* Table 11.

[161] The Midwestern states are IA, IL, IN, KS MI, MN, MO, NE, ND, OH, SD, and WI. *See* Table 11.

[162] The Southern states are AL, AR, FL, GA, LA, MS, NC, OK, TN, TX, and VA. *See* Table 11.

[163] The Northeastern states are CT, MA, ME, NH, NJ, NY, PA, and RI. *See* Table 11.

remains from unknown recovery locations—five for federal agencies and 43 for museums.

Human remains from the B.C. period are much more geographically concentrated for federal agencies, with 87% (96) located in Kentucky and the remainder in Washington (13) and Alaska (1). While fewer, Museum B.C. remains are spread among several regions, including over half in the western states of Alaska (3), California (2), and Nevada (7) with the rest in the southern states of Georgia (1) and Texas (5), the mid-western states of South Dakota (1) and Wisconsin (1), and Maine (1) in the north-east. Federal agency remains from the B.C.-A.D. category are concentrated in two regions—78% (396) are from western states[164] and 22% (113) from the south.[165] Museum affiliated remains from this period were primarily recovered in the same regions—54% (792) are from southern states[166] and 33% (473) are from the west.[167] Of the remaining B.C.-A.D. museum remains, 3% (39) are from the northeast[168] and 10% (149) are of unknown origins.

For both institution types, the majority of the remains from the Overbroad chronological category were recovered in western states. Federal agencies reported 74% (442) of the Overbroad remains as coming from the west[169]—along with 21% (124) from the south[170] and 5% (30) from the mid-west.[171] Likewise, 65% (2,060) of the museum reported Overbroad remains were from western states,[172] followed by 26% (829) from the mid-west,[173] 6% (176) from the north-east,[174] 3% (101) from the south,[175] and 0.2% (8) had no provenance.

The overwhelming majority of human remains of Unknown chronology that were culturally affiliated by federal agencies and museums were recovered from western states. For federal agencies, the West[176] accounted for 98% (2,117) of federal agency Unknown chronology human remains,

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[164] The Western states are AK, AZ, CA, CO, OR and WA. *See* Table 11.

[165] The Southern states are OK and TX. *See* Table 11.

[166] The Southern states are AR and LA. *See* Table 11.

[167] The Western states are AK, AZ, CA, ID, NM, NV and UT. *See* Table 11.

[168] The Northeastern states are NH, NY, and VT. *See* Table 11.

[169] The Western states are AK, CA, ID, OR, and WA. *See* Table 11.

[170] The Southern states are AR, GA, and OK. *See* Table 11.

[171] The Midwestern states are IL, IN, MN, and SD. *See* Table 11.

[172] The Western states are AK, AZ, CA, CO, NV, UT, and WA. *See* Table 11.

[173] The Midwestern states are MI, NE, and WI. *See* Table 11.

[174] The Northeastern states are MA, ME, NH, NY, and RI. *See* Table 11.

[175] The Southern states are AL, FL, NC, and TX. *See* Table 11.

[176] The Western states are AK, AZ, CA, HI, ID, MT, NM, NV, OR, and WA. *See supra* Table 11.

while the south[177] accounted for 1% (30) and roughly 0.5% (11) from the mid-west.[178] About, 0.1% (3) of the federal agency remains with Unknown chronologies also lacked recovery site information. Similarly, 95% (4,928) of the museum affiliated human remains have western origins,[179] while 2% (86) were from the south,[180] 1% (66) from the mid-west,[181] and about 0.2% (12) from the north-east.[182] An additional 2% (96) of the museum Unknown chronology remains also lacked provenance. One should, however, note that a large portion of the remains with Unknown chronology, 1,627 for federal agencies and 1,039 for museums, are from Hawai'i and are most likely from the A.D. period.[183]

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[177] The Southern state is AR. *See supra* Table 11.

[178] The Midwest states are ND, SD, and WI. *See* Table 11.

[179] The Western are AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA, and WY. *See* Table 11.

[180] The Southern states are AR, FL, GA, KY, OK, TX, and WV. *See* Table 11.

[181] The Midwestern states are IL, IA, KS, MI, MN, NE, ND, SD, and WI. *See* Table 11.

[182] The Northeast states are ME and NY. *See* Table 11.

[183] *See* S.K. Kim, et al., *Population Genetic Structure and Origins of Native Hawaiians in the Multiethnic Cohort Study*, PLOS ONE (2012) http://journals.plos.org/plosone/article?id=10.1371%2Fjournal.pone.0047881 (visited Jul. 12, 2015) ("the Hawaiian archipelago was initially settled by Polynesian settlers between 300 A.D. and 800 A.D." citing, Nordyke CE (1989) The Peopling of Hawai'i Honolulu, HI: The University of Hawai'i Press.).

Table 11: Recovery State and Chronology of Culturally Affiliated Human Remains, 1992–2013

	Federal Agency—Native American Human Remains						Museum—Native American Human Remains					
Recovery State	**AD**	**BC**	**BC-AD**	**Over-broad**	**Un-known**	**Total**	**AD**	**BC**	**BC-AD**	**Over-broad**	**Un-known**	**Total**
Alabama	5	0	0	0	0	5	132	0	0	2	0	134
Alaska	537	1	25	1	363	927	82	3	137	2	200	424
Arizona	7,534	0	6	0	5	7,545	325	0	5	0	272	602
Arkansas	54	0	0	28	0	82	764	0	0	1	5	770
California	189	0	5	69	30	293	1,260	2	788	1,721	1,731	5,502
Colorado	1,977	0	49	0	3	2,029	421	0	301	316	11	1,049
Connecticut	0	0	0	0	0	0	24	0	0	0	0	24
Delaware	0	0	0	0	0	0	0	0	0	0	0	0
Florida	192	0	0	0	0	192	9	0	0	15	72	96
Georgia	75	0	0	25	0	100	481	1	0	0	1	483
Hawaii	27	0	0	0	1,627	1,654	968	0	0	0	1,039	2,007
Idaho	9	0	0	7	4	20	1	0	0	0	3	4
Illinois	1	0	0	1	0	2	179	0	6	0	8	193
Indiana	0	0	0	1	0	1	11	0	0	0	0	11
Iowa	11	0	0	0	0	11	206	0	0	0	1	207
Kansas	1	0	0	0	0	1	55	0	0	0	2	57
Kentucky	3	96	0	0	0	99	0	0	0	0	3	3
Louisiana	9	0	0	0	0	9	125	0	0	0	0	125
Maine	9	0	0	0	0	9	99	1	4	28	5	137
Maryland	0	0	0	0	0	0	0	0	0	0	0	0
Massachusetts	4	0	0	0	0	4	266	0	0	85	0	351
Michigan	0	0	0	0	0	0	417	0	0	0	14	431
Minnesota	59	0	0	7	0	66	385	0	0	3	1	389
Mississippi	237	0	0	0	0	237	17	0	0	0	0	17
Missouri	3	0	0	0	0	3	196	0	0	0	0	196
Montana	7	0	0	0	5	12	63	0	0	0	3	66
Nebraska	19	0	0	0	0	19	2,035	0	0	821	15	2,871
Nevada	42	0	0	0	36	78	43	7	16	17	1	84
New Hampshire	0	0	0	0	0	0	13	0	35	6	0	54
New Jersey	35	0	0	0	0	35	17	0	0	0	0	17
New Mexico	1,969	0	265	0	29	2,263	3,473	0	4	0	966	4,443
New York	8	0	0	0	0	8	1,134	0	2	21	7	1,164

North Carolina	0	0	0	0	0	0	414	0	0	69	0	483
North Dakota	10	0	0	0	9	19	47	0	0	0	13	60
Ohio	0	0	0	0	0	0	8	0	0	0	0	8
Oklahoma	30	0	62	71	0	163	548	0	0	0	2	550
Oregon	36	0	1	154	19	210	377	0	0	0	294	671
Pennsylvania	7	0	0	0	0	7	185	0	0	0	0	185
Rhode Island	0	0	0	0	0	0	45	0	0	36	0	81
South Carolina	27	0	0	0	0	27	0	0	0	0	0	0
South Dakota	24	0	0	21	1	46	113	1	0	0	6	120
Tennessee	84	0	0	0	0	84	18	0	0	0	0	18
Texas	92	0	0	0	0	92	504	4	0	15	2	525
Utah	32	0	51	0	0	83	121	0	4	1	3	129
Vermont	0	0	0	0	0	0	0	0	2	0	0	2
Virginia	0	0	0	0	0	0	169	0	0	0	0	169
Washington	235	13	45	211	26	530	867	0	0	2	403	1,272
Washington, DC	0	0	0	0	0	0	0	0	0	0	0	0
West Virginia	0	0	0	0	0	0	0	0	0	0	1	1
Wisconsin	25	0	0	0	1	26	261	1	0	5	6	273
Wyoming	8	0	0	0	0	8	10	0	0	0	2	12
Unknown	5	0	0	0	3	8	43	0	149	8	96	296
Total	**13,631**	**110**	**509**	**596**	**2,161**	**17,007**	**16,931**	**20**	**1,453**	**3,174**	**5,188**	**26,766**

Note: There is one federal agency set of human remains from British Columbia, Canada, with an "Unknown" chronology. There are also four sets of museum human remains are from British Columbia with "Unknown" chronologies.

K. NAGPRA Sub-Entities: Looking Behind the Federal Agency and Museum Categories

Table 12 provides the repatriation decision information by federal agency and museum sub-entities and is a more granular description of Table 5 above. With 231 of the 375 federal agency decisions (or 62%), the Department of the Interior ("DOI") comprises the vast majority of the federal agency sub-entity affiliation determinations, making it difficult to compare the rest of sub-entities' determinations. Comparisons, therefore, are primarily focused on the DOI, Cultural Institution, State Agency, and University NAGPRA decisions.

L. Findings: Baseline Comparisons

With respect to the number of affiliated human remains, DOI averages 36.62 per decision and is slightly higher than the averages of the Cultural Institutions (20.82), State Agencies (26.88), and Universities (25.32). Similarly, DOI appears to have slightly more cases of multiple cultural affiliate decisions (57%) in contrast to Cultural Institutions (52%), State Agencies (45%), and Universities (54%). All four have similar figures for the percent of multiple cultural affiliate cases, evidence type use, and cultural affiliates, with DOI having the highest number in each category. The only category DOI outstrips the museum sub-entities on is consultant numbers. DOI averages 8.82 consultants per decision with Cultural Institutions (5.11), Stage Agencies (4.78) and Universities (5.87) averaging far fewer.

Table 12: Descriptive Statistics for Cultural Affiliation Decisions by Federal Agency and Museum Sub-Entities, 1992–2013

Institution	N	Human Remains (x̄)	Funerary Objects (x̄)	Consultants (x̄)	Consultant % Single (S) / Multiple (M)	Evidence Types (x̄)	Affiliate (x̄)	Affiliate % Single (S) / Multiple (M)
Federal Agency								
DHS	2	2 (1)	0	4 (2)	S. 50% / M. 50%	8 (4)	4 (2)	S. 50% / M. 50%
DOD	60	3,029 (50.48)	56,344 (939.07)	268 (4.47)	S. 30% / M. 70%	383 (6.38)	211 (3.52)	S. 45% / M. 55%
DOE	5	7 (1.4)	1,341 (268.2)	41 (8.2)	S. 0 / M. 100%	33 (6.6)	31 (6.2)	S. 0 / M. 100%
DOI	231	8,459 (36.62)	121,142 (524.42)	2,037 (8.82)	S. 31% / M. 69%	1,539 (6.66)	1,002 (4.34)	S. 43% / M. 57%
DOJ	5	9 (1.8)	3 (.6)	28 (5.6)	S. 20% / M. 80%	29 (5.8)	12 (2.4)	S. 60% / M. 40%
TVA	2	39 (19.5)	2,564 (1,282)	20 (10)	S. 0 / M. 100%	12 (6)	4 (2)	S. 50% / M. 50%
USDA	70	5,472 (78.17)	35,676 (509.66)	439 (6.27)	S. 20% / M. 80%	454 (6.49)	225 (3.21)	S. 44% / M. 56%
	375	**17,017 (45.38)**	**217,070 (578.85)**	**2,837 (7.57)**	**S. 28% / M. 72%**	**2,458 (6.55)**	**1,489 (3.97)**	**S. 43% / M. 57%**

Museum								
Cultural Inst.	318	6,622 (20.82)	97,457 (306.47)	1,626 (5.11)	S. 35% / M. 64%	1,783 (5.61)	1,163 (3.66)	S. 48% / M. 52 %
State Agency	213	5,726 (26.88)	447,726 (2,102)	1,019 (4.78)	S. 34 % / M. 66%	1,300 (6.1)	653 (3.07)	S. 55 % / M. 45%
Uni-versity	570	14,434 (25.32)	403,585 (708.04)	3,346 (5.87)	S. 33% / M. 67%	3,508 (6.14)	2,269 (3.98)	S. 46% / M. 54%
	1,101	**26,782 (24.33)**	**948,768 (861.73)**	**5,991 (5.44)**	**S. 34% / M. 66%**	**6,591 (5.99)**	**4,085 (3.71)**	**S. 48 % / M. 52%**
Grand Total	**1,476**	**43,799 (29.67)**	**1,165,838 (789.86)**	**8,828 (5.98)**	**S. 33% / M. 67%**	**9,049 (6.13)**	**5,574 (3.78)**	**S. 47% / M. 53%**

Note: The federal agency sub-entity acronyms and full names are as follows: 1) DHS is the U.S. Department of Homeland Security; 2) DOD is the U.S. Department of Defense; 3) DOE is the U.S. Department of Energy; 4) DOI is the U.S. Department of the Interior; 5) DOJ is the U.S. Department of Justice; 6) TVA is the Tennessee Valley Authority; and 7) USDA is the U.S. Department of Agriculture. The museum sub-entities are: 1) Cultural Institutions comprising large, medium and small museums and various non-state controlled historical societies; 2) State Agency represents state government institutions, such as the Missouri Department of Transportation; and 3) University includes private and public institutions of higher education. Two Cultural Inst. decisions were made without consultation (N = 2; 0.6%).

M. Findings: Sub-Entity Evidence Types Used

Table 13 includes a more detailed view of the evidence types federal agency and museum sub-entities used in their affiliation decisions. The sub-entities with only a handful of decisions were not included. As previously noted, the number of decisions from the Department of Defense ("DOD") and Department of Agriculture ("USDA") are much lower than those generated by DOI and the museum sub-entities. With this in mind, the context remains useful and the federal agency sub-entity figures in Table 13 are very similar to each other and to the combined federal agency figures in Table 6.

There are, however, several notable differences. For instance, DOD has lower percentages for Cultural (33%) evidence use than DOI (41%), USDA (47%), and federal agencies combined (41%). DOD's figure for Oral Tradition (25%) evidence use is also lower than DOI (57%), USDA (64%), and federal agencies combined (52%). Likewise, USDA used documentary evidence (14%) less frequently than DOD (32%), DOI (31%) and federal agencies combined (29%).

Differences among the museum sub-entities appear to be confined to Cultural Institution evidence use. Cultural institutions had much lower figures for Archaeological (52%), Cultural (16%), and Oral Tradition (18%), than State Agencies (73%, 21%, 31%), Universities (60%, 29%, 37%), and museums combined (60%, 24%, 31%). Cultural Institutions did have a higher figure for Documentary evidence use (60%) compared to State Agencies (39%), Universities (55%), and museums combined (53%).

Table 13: Evidence Types Used by Federal Agency and Museum Sub-Entities in Cultural Affiliation Decisions, 1992–2013

Evidence Type	**DOD** (N/60)	**DOI** (N/231)	**USDA** (N/70)	**Cult. Inst.** (N/318)	**State Agency** (N/213)	**University** (N/570)
Geographic	98% (59)	99% (230)	100% (70)	99% (315)	99% (212)	98% (560)
Expert Opinion	100% (60)	100% (231)	100% (70)	100% (318)	100% (213)	100% (570)
Archaeological	77% (46)	82% (189)	93% (65)	52% (165)	73% (155)	60% (344)
Cultural	33% (20)	41% (95)	47% (33)	16% (52)	21% (44)	29% (165)
Biological	85% (51)	74% (171)	67% (47)	78% (248)	78% (166)	79% (450)
Artifact Analysis	77% (46)	69% (160)	80% (56)	47% (150)	64% (137)	51% (292)
Burial Practice	27% (16)	29% (66)	17% (12)	22% (69)	23% (49)	21% (118)
Historical	58% (35)	57% (132)	53% (37)	56% (178)	69% (146)	66% (374)
Documentary	32% (19)	31% (71)	14% (10)	60% (192)	39% (82)	55% (314)
Linguistic	18% (11)	17% (40)	6% (4)	8% (25)	11% (24)	17% (94)
Religious	0	7% (17)	4% (3)	2% (7)	2% (9)	2% (9)
Oral Tradition	25% (15)	57% (132)	64% (45)	18% (58)	31% (66)	37% (212)
Genealogical	8% (5)	2% (4)	3% (2)	2% (6)	1% (2)	1% (5)

N. Findings: Sub-Entity Decisions by Chronology

Table 14 presents federal agency and museum sub-entity cultural affiliation decision data by chronology. The most useful decision figures to compare are the A.D. and Unknown categories for DOI, Cultural Institutions, State Agencies, and Universities. Overall, the decision statistics for A.D. human remains and funerary objects appear to be similar for the sub-entities. The most obvious difference is DOI average number of consultants (9.48) is much higher than the average number of consultants for Cultural Institutions (5.19), State Agencies (4.82), and Universities (6.17). DOI also had a higher percentage of decisions with multiple cultural affiliates (62%) than Cultural Institutions (48%), State Agencies (42%), and Universities (52%). There also is a large difference between the DOI average number of cultural affiliates (4.63) and the average number of affiliates for State Agencies (2.65).

With respect to comparing figures for the Unknown chronology category, the most important difference among the sub-entities is the number of affiliation decisions made without temporal information. Cultural Institutions and Universities made vastly more affiliation decisions for human remains and funerary objects than DOI and State Agencies. For instance, Cultural Institutions made 105 (or 33%) of their affiliation decisions from the Unknown chronological category that included 1,305 human remains and 5,891 funerary objects. Similarly, Universities made 192 (or 34%) of their affiliation decisions from the Unknown category that included 3,662 human remains and 42,294 funerary objects. DOI made 29 (or 13%) of its affiliation decisions from the Unknown category that included 463 human remains and 2,851 funerary objects. Like DOI, State Agencies made fewer Unknown chronological decisions, making only 35 (or 16%) that included 222 human remains and 9 funerary objects.

Table 14: Chronology of Native American Human Remains and Funerary Objects by Federal Agency and Museum Sub-Entity Cultural Affiliation Decisions, 1992–2013.

Institution & Chrono-logy	Decision N & %	Human Remains ($\bar{x}$)	Funerary Objects ($\bar{x}$)	Consul-tants ($\bar{x}$)	Consultant % Single (S)/Multiple (M)	Evidence Types ($\bar{x}$)	Affiliate ($\bar{x}$)	Affiliate % Single (S)/ Multiple (M)
DOD								
AD	31 (44%)	723 (23.32)	15,202 (490.39)	154 (4.97)	S.36% / M.64%	191 (6.16)	95 (3.06)	S. 55% / M. 45%
B.C.	2 (33%)	108 (54)	1,756 (878)	12 (6)	S. 0 / M. 100%	15 (7,5)	12 (6)	S. 0 / M. 100%
B.C.-AD	2 (33%)	107 (53.5)	3,834 (1,917)	7 (3.5)	S. 0 / M. 100%	13 (6.5)	6 (3)	S. 50% / M. 50%
Overbroad	14 (23%)	436 (31.14)	34,764 (2,483)	57 (4.07)	S. 43% / M. 57%	105 (7.5)	46 (3.28)	S. 50% / M. 50%
Unknown	11 (18%)	1,655 (150.45)	788 (71.64)	38 (3.45)	S. 9% / M. 91%	59 (5.36)	52 (4.73)	S. 18% / M. 82%
Total	**60**	**3,029 (50.48)**	**56,344 (939.07)**	**268 (4.47)**	**S. 30% / M. 70%**	**383 (6.38)**	**211 (3.52)**	**S. 45% / M. 55%**
DOI								
A.D.	191 (83%)	7,532 (39.43)	116,498 (609.94)	1,810 (9.48)	S. 26% / M.74%	1,297 (6.79)	884 (4.63)	S. 38% / M. 62%
B.C.	2 (.8%)	2 (1)	0	3 (1.5)	S. 50% / M.50%	10 (5)	2 (1)	S. 100% / M. 0
B.C.-AD	4 (1%)	329 (83.25)	1,006 (251.50)	84 (21)	S. 0 / M. 100%	32 (8)	48 (12)	S. 25% / M. 75%
Overbroad	5 (2%)	133 (26.60)	787 (157.40)	29 (5.8)	S. 40% / M. 60%	34 (6,8)	13 (2.6)	S. 60% / M. 40%
Unknown	29 (13%)	463 (15.97)	2,851 (98.31)	111 (3.82)	S. 35% / M. 65%	166 (5.72)	55 (1.90)	S. 28% / M. 72%
Total	**231**	**8,459 (36.62)**	**121,142 (524.42)**	**2,037 (8.82)**	**S. 31% / M. 69%**	**1,539 (6.66)**	**1,002 (4.34)**	**S. 43% / M. 57%**
USAID								
A.D.	59 (84%)	5,339 (90.49)	34,167 (579.10)	351 (5.95)	S. 80% / M. 20%	382 (6.47)	184 (3.12)	S. 42% / M.58%
B.C.	0	0	0	0	S. 0 / M. 0	0	0	S. 0 / M. 0
B.C.-AD	4 (6%)	69 (17.25)	1,222 (305.50)	37 (9.25)	S. 25% / M. 75%	27 (6.75)	24 (6)	S. 75% / M. 25%

Overbroad	1	28	10	22	S. 0 /	6	2	S. 0 /
	(1%)	(28)	(10)	(22)	M. 100%	(6)	(2)	M. 100%
Unknown	6	36	277	29	S. 17% /	39	15	S. 50% / M.
	(9%)	(6)	(46.17)	(4.83)	M. 83%	(6.5)	(2.5)	50%
Total	**70**	**5,472**	**35,676**	**439**	**S. 20% /**	**454**	**225**	**S. 44% /**
		(78.17)	**(509.66)**	**(6.27)**	**M. 80%**	**(6.49)**	**(3.21)**	**M. 56%**
Cult. Inst.								
A.D.	192	5,128	90,896	997	S. 34% /	1,159	642	S. 52% /
	(60%)	(26.71)	(473.42)	(5.19)	M. 65%	(6.04)	(3.34)	M. 48%
B.C.	2	3	18	6	S. 0 /	13	4	S. 50% /
	(.6%)	(1.5)	(9)	(3)	M. 100%	(6.5)	(2)	M. 50%
B.C.-A.D.	3	13	0	16	S. 33 % /	15	15	S. 33% /
	(.9%)	(4.33)		(5.33)	M. 67%	(5)	(5)	M.67 %
Overbroad	16	173	652	109	S. 19 % /	105	89	S. 31% /
	(5%)	(10.81)	(40.75)	(6.81)	M. 81%	(6.56)	(5.56)	M. 69%
Unknown	105	1,305	5,891	498	S. 40% /	491	413	S. 46% /
	(33%)	(12.43)	(56.10)	(4.74)	M. 59 %	(4.68)	(3.93)	M. 54%
Total	**318**	**6,622**	**97,457**	**1,626**	**S. 35% /**	**1,783**	**1,163**	**S. 48% /**
		(20.82)	**(306.47)**	**(5.11)**	**M. 64%**	**(5.61)**	**(3.66)**	**M. 52 %**
State Agency								
A.D.	155	3,776	427,938	747	S. 33% /	977	411	S. 58% /
	(73%)	(24.36)	(2760.89)	(4.82)	M.67 %	(6.30)	(2.65)	M. 42%
B.C.	6	11	17	40	S. 0 /	31	33	S. 17% /
	(3%)	(1.83)	(2.83)	(6.67)	M. 100%	(5.166)	(5.5)	M. 83%
B.C.-A.D.	6	966	5,310	89	S. 0 /	49	76	S. 17% /
	(3%)	(161)	(885)	(14,83)	M. 100%	(8.17)	(12.67)	M. 83%
Overbroad	11	751	14,452	49	S. 27% /	84	44	S. 27% /
	(5%)	(68.27)	(1,313.82)	(4.45)	M. 73%	(7.64)	(4)	M. 73%
Unknown	35	222	9	94	S. 54% /	159	89	S. 60% /
	(16%)	(6.34)	(.2571)	(2.69)	M. 46%	(4.54)	(2.54)	M. 40%
Total	**213**	**5,726**	**447,726**	**1,019**	**S. 34 % /**	**1,300**	**653**	**S. 55 % /**
		(26.88)	**(2,102)**	**(4.78)**	**M. 66%**	**(6.1)**	**(3.07)**	**M. 45%**
University								
A.D.	336	7,996	325,803	2,074	S. 32% /	2,186	1,308	S. 48% /
	(59%)	(23.80)	(969.65)	(6.17)	M. 68%	(6.51)	(3.89)	M.52%
B.C.	2	8	3	5	S. 0 /	13	10	S. 0 /
	(.4%)	(4)	(1.5)	(2.5)	M. 100%	(6.5)	(5)	M. 100%
B.C.-A.D.	15	470	8,839	141	S. 13% /	105	103	S.13% /
	(2%)	(31.33)	(589.27)	(9.4)	M. 87%	(7)	(6.87)	M. 87%
Overbroad	25	2,298	26,646	208	S. 36% /	188	210	S. 40% /
	(4%)	(91.92)	(1,065.84)	(8.3)	M. 64%	(7.52)	(8.4)	M. 60%

Unknown	192 (34%)	3,662 (19.07)	42,294 (220.28)	918 (4.78)	S. 37% / M. 63%	1,016 (5.29)	638 (3.32)	S. 47% / M. 53%
Total	**570**	**14,434 (25.32)**	**403,585 (708.04)**	**3,346 (5.87)**	**S. 33% / M. 67%**	**3,508 (6.14)**	**2,269 (3.98)**	**S. 46% / M. 54%**

Note: Two Cultural Inst. Decisions (1 = A.D.; 1 = Unknown) were made without consultation (N = 2; 0.6%)

O. Findings: Specific Sub-Entity Baseline Statistics

Tables 15 and 16 are a further sub-set of Tables 12 and 14, which include the specific institutions of the federal agency and museum sub-entities that registered enough cultural affiliation decisions to be analyzed. Again, low numbers make it difficult to compare some of the institution decisions. Indeed, California is the State Agency with the most NAGPRA cultural affiliation decisions and it only represents 37 decisions on Table 15. Thus, the most useful comparisons for both tables are among the Large Museum, Small-Medium Museum, Private University, and Public University decision-makers. One striking detail on Table 15 is the apparent uniformity in affiliation figures for these four decision-making groups. Nothing stands out unless you compare NPS, which has higher figures for the percent of multiple consultants, average evidence types used, and percent of multiple affiliates found.

Table 15: Descriptive Statistics for Specific Sub-Entity Repatriation Decisions, 1992–2013.

Institution	N	Human Remains ($\bar{x}$)	Funerary Objects ($\bar{x}$)	Consul-tants ($\bar{x}$)	Consultant % Single (S) / Multiple (M)	Evidence Types ($\bar{x}$)	Affiliate ($\bar{x}$)	Affiliate % Single (S) / Multiple(M)
Federal Agency								
DOD-USACE	31	958 (30.90)	45,572 (1,470.06)	140 (4.52)	S. 29% / M.71%	209 (6.74)	106 (3.42)	S. 42% / M. 58%
DOI-BIA	43	1,976 (45.95)	11,849 (275.56)	202 (4.70)	S. 51% / M. 49%	271 (6.30)	162 (3.77)	S. 56% / M. 44%
DOI-BLM	67	1,576 (23.52)	19,224 (286.93)	539 (8.04)	S. 31% / M. 69%	422 (6.30)	235 (3.51)	S. 51% / M. 49%
DOI-NPS	93	4,221 (45.39)	84,574 (909.40)	1,175 (12.63)	S. 17%/ M. 83%	664 (7.14)	553 (5.95)	S. 27% / M. 73%
USDA-USFS	70	5,472 (78.17)	35,676 (509.66)	439 (6.27)	S. 20% / M. 80%	454 (6.49)	225 (3.21)	S. 44% / M. 56%
Museum								
CA-State	37	1,272 (34.38)	83,286 (2,250.97)	187 (5.05)	S. 35% / M. 65%	226 (6.11)	193 (5.22)	S. 32% / M. 68%
LG Inst/Museum	173	4,525 (26.16)	26,922 (155.62)	891 (5.15)	S. 35% / M. 64%	951 (5.50)	582 (3.36)	S. 50% / M. 50%
S-M Inst/Museum	145	2,097 (14.46)	70,535 (486.45)	735 (5.07)	S. 35% / M. 64 %	832 (5.74)	581 (4.01)	S. 47 % / M. 53%
Private University	218	3,603 (16.53)	7,241 (33.22)	1,472 (6,75)	S. 31% / M. 69 %	1,245 (5.71)	818 (3.75)	S. 46% / M. 54%
Public University	352	10,831 (30.77)	396,344 (1,125.98)	1,874 (5.32)	S. 34% / M. 66%	2,263 (6.43)	1,451 (4.12)	S. 46% / M. 54%

Note: The federal agency specific sub-entity acronyms and full names are as follows: 1) DOD's USACE is the U.S. Army Corps of Engineers; 2) DOI's BIA is the Bureau of Indian Affairs; 3) DOI's BLM is the Bureau of Land Management; 4) DOI's NPS is the National Park Service; and 5) USDA's USFS is the U.S. Forrest Service. The museum specific sub-entities are: 1) State Agency's State of California; 2) Cultural Institutions Large Museums; 3) Cultural Institutions' Small-Medium Museums; 4) Universities' Private institutions of higher education; and 5) Universities' public institutions of higher education. One LG Museum made its decision without consultation (N = 1; .6%) and one S-M Inst/Museum made a decision without consultation (N = 1; 0.7%).

P. Findings: Specific Sub-Entity Decisions by Chronology

Comparing the Large Museum, Small-Medium Museum, Private University, and Public University institutions on Table 16 also suggests a high prevalence of uniformity in data used to make decisions. There are, however, a few differences. The most noteworthy is the high average of Private University Native consultants (7.62) for the A.D. period compared to Large Museums (5.25), Small-Medium Museums (5.13), and Public Universities (5.16). There are only slight differences between Large Museums having higher multiple consultant (61%) and affiliate (45%) percentage findings for human remains and funerary objects from the A.D. chronological category. Also, there is a large spread between the percentage of multiple consultants used by Large Museums for the Unknown category (69%) and the Small-Medium ("S-M") Museums findings (46%). Again, NPS differs from the museum specific sub-entities, making fewer Unknown chronology decisions and having higher figures for Native consultants, percentage of multiple consultants, evidence type use, affiliates, and percentage of multiple affiliates.[184]

Table 16: Chronology of Native American Human Remains and Funerary Objects by Federal Agency and Museum Specific Sub-Entity Repatriation Decisions, 1992–2013

Institution & Chronology	Decision N & %	Human Remains ($\bar{x}$)	Funerary Objects ($\bar{x}$)	Consultants ($\bar{x}$)	Consultant % Single (S) / Multiple(M)	Evidence Types ($\bar{x}$)	Affiliate ($\bar{x}$)	Affiliate % Single (S) / Multiple (M)
DOI-NPS								
AD	83 (89%)	3,812 (45.93)	83,047 (1,000.57)	1,094 (13.18)	S. 12% / M. 88%	596 (7.18)	515 (6.20)	S. 21% / M. 79%
B.C.	1 (1%)	1 (1)	0	1 (1)	S. 100% / M. 0	5 (5)	1 (1)	S. 100% / M. 0
B.C.-AD	1 (1%)	265 (265)	743 (743)	25 (25)	S. 0 / M. 100%	10 (10)	20 (20)	S. 0 / M. 100%
Over-broad	3 (3%)	125 (41.67)	784 (261.33)	18 (6)	S. 67% / M. 33%	24 (8)	3 (1)	S. 100% / M. 0
Un-known	5 (5%)	18 (3.6)	0	37 (7.4)	S. 60% / M. 40%	29 (5.8)	14 (2.8)	S. 80% / M. 20%

[184] *See supra* Table 16.

Total	**93**	**4,221 (45.39)**	**84,574 (909.40)**	**1,175 (12.63)**	**S. 17%/ M. 83%**	**664 (7.14)**	**553 (5.95)**	**S. 27% / M. 73%**
Large Museum								
A.D.	104 (60%)	3,288 (31.61)	26,031 (250.3)	546 (5.25)	S. 39% / M. 61%	620 (5.96)	343 (3.3)	S. 55% / M.45%
B.C.	1 (.6%)	1 (1)	18 (18)	4 (4)	S. 0 / M. 100%	8 (8)	4 (4)	S. 0 / M. 100%
B.C.-A.D.	0	0	0	0	S. 0 / M. 0	0	0	S. 0 / M. 0
Over-broad	7 (4%)	118 (16.86)	442 (63.14)	50 (7.14)	S. 29% / M. 71%	49 (7)	44 (6.29)	S. 29% / M. 71%
Un-known	61 (35%)	1,118 (18.33)	431 (7.07)	291 (4.77)	S. 31% / M. 69%	274 (4.49)	191 (3.13)	S. 44% / M. 56%
Total	**173**	**4,525 (26.16)**	**26,922 (155.62)**	**891 (5.15)**	**S. 35% / M. 64%**	**951 (5.50)**	**582 (3.36)**	**S. 50% / M. 50%**
S-M Museum								
A.D.	88 (61%)	1,840 (20.91)	64,865 (737.1)	451 (5.13)	S. 30% / M.70%	539 (6.13)	299 (3.4)	S. 48% / M.52%
B.C.	1 (.7%)	2 (2)	0	2 (2)	S. 0 / M. 100%	5 (5)	0	S. 100% / M. 0
B.C.-A.D.	3 (2%)	13 (4.33)	0	16 (5.33)	S. 33% / M.67%	15 (5)	15 (5)	S. 33% / M. 67%
Over-broad	9 (6%)	55 (6.11)	210 (23.33)	59 (6.56)	S. 11% / M.89%	56 (6.22)	45 (5)	S. 33% / M. 67%
Un-known	44 (30%)	187 (4.25)	5,460 (124.09)	207 (4.70)	S. 52% / M. 46%	217 (4.93)	222 (5.05)	S. 48% / M. 52%
Total	**145**	**2,097 (14.46)**	**70,535 (486.45)**	**735 (5.07)**	**S. 35% / M. 64 %**	**832 (5.74)**	**581 (4.01)**	**S. 47 % / M. 53%**
Private University								
A.D.	138 (63%)	2,799 (20.28)	6,477 (46.93)	1,052 (7.62)	S. 26% / M. 74%	844 (6.12)	500 (3.62)	S. 49% / M. 51%
B.C.	0	0	0	0	S. 0 / M. 0	0	0	S. 0 / M. 0
B.C.-A.D.	5 (2%)	75 (15)	210 (42)	82 (16.4)	S.0% / M. 100%	34 (6.8)	59 (11.8)	S. 20% / M.80%
Over-broad	4 (2%)	89 (22.25)	0	27 (6.75)	S. 50% / M. 50%	26 (6.5)	19 (4.75)	S. 50% / M. 50%
Un-known	71 (33%)	640 (9.01)	554 (7.8)	311 (4.38)	S. 41% / M.59 %	341 (4.8)	240 (3.38)	S. 44% / M. 56%
Total	**218**	**3,603 (16.53)**	**7,241 (33.22)**	**1,472 (6,75)**	**S. 31% / M. 69 %**	**1,245 (5.71)**	**818 (3.75)**	**S. 46% / M. 54%**

Public University								
A.D.	198 (56%)	5,197 (26.25)	3319,326 (1,612.76)	1,022 (5.16)	S. 36% / M.64%	1,342 (6.78)	808 (4.08)	S. 48% / M. 52%
B.C.	2 (.6%)	8 (4)	3 (1.5)	5 (2.5)	S. 0 / M. 100%	13 (6.5)	10 (5)	S. 0 / M. 100%
B.C.-A.D.	10 (3%)	395 (39.5)	8,629 (862.9)	59 (5.9)	S. 20% / M. 80%	71 (7.1)	44 (4.4)	S. 10% / M. 90%
Over-broad	21 (6%)	2,209 (105.19)	26,646 (1,268.86)	181 (8.62)	S. 33% / M. 67%	162 (7.71)	191 (9.1)	S. 38% / M. 62%
Un-known	121 (34%)	3,022 (24.98)	41,740 (34496)	607 (5.02)	S. 34% / M. 66%	675 (5.58)	398 (3.29)	S. 49% / M. 51%
Total	**352**	**10,831 (30.77)**	**396,344 (1,125.98)**	**1,874 (5.32)**	**S. 34% / M. 66%**	**2,263 (6.43)**	**1,451 (4.12)**	**S. 46% / M. 54%**

Note: One S-M Museum made a Cultural Reburial decision (i.e., no disposition to specific recipients) on the B.C. human remains. One LG Museum made an A.D. decision without consultation (N = 1; 1%). One S-M Museum made an Unknown decision without consultation (N = 1, 2%).

Q. What Influences the Number of Cultural Affiliates in NAGPRA Repatriation Decisions?

As noted in Table 5, NAGPRA repatriation decisions with more than one cultural affiliate are common—53% of all the 1992–2013 decisions had multiple cultural affiliates. So, what is influencing the number of cultural affiliates? Is there a statistically significant (i.e., not attributable to chance) relationship between the number of determined cultural affiliates and the number of human remains, funerary objects, Native consultants, and evidence types used? To test these questions, a series of multiple regression analyses were run to examine the relationships between cultural affiliates and human remains, funerary objects, consultants, and evidence types for the combined NAGPRA affiliation decisions and by the federal agency and museum decision-makers.

Table 17 summarizes the descriptive statistics, correlation with cultural affiliates, and regression results of the combined NAGPRA cultural affiliation decisions. The prediction model suggests human remains, consultants, and evidence types have significant, positive correlations with cultural affiliates, and the number of consultants has the strongest correlation. The number of funerary objects is not a significant predictor for this model. Clearly, the consultants variable (beta = .607) is the primary contributor to and predictor of cultural affiliates, and to a much lesser extent evidence types (beta = .070) and human remains (beta = 0.042). The

prediction model, therefore, also can be expressed as cultural affiliates = 0.042 (human remains) + 0.607 (consultants) + 0.070 (evidence), which means the number of cultural affiliates is predicted to increase 0.042 when the number of human remains goes up by one, increase 0.607 when the number of Native consultants goes up by one, and increase 0.070 when amount of evidence types goes up by one. The prediction model is statistically significant; F (4, 1,471) = 239.701, $p < 0.0005$, and accounted for approximately 40% of the variance in cultural affiliates ($R^2 = 0.395$ and Adjusted $R^2 = 0.393$).

Table 17: Summary Multiple Regression Analysis for Combined NAGPRA Cultural Affiliation Decisions, 1992–2013

Variable	$\bar{x}$	Std. Dev.	N	Pearson Correlation with Cultural Affiliates	Sig. (1-tailed)	Standardized/Beta Coefficients	Sig./ P-Value	Tolerance	VIF
Human Remains	29.67	125.69	1,476	.095	.000	.042	.046	.937	1.067
Funerary Objects	789.86	6461.63	1,476	-.003	.450	-.022	.284	.960	1.041
Consultants	5.98	7.38	1,476	.622	.000	.607	.000	.964	1.038
Evidence Types	6.13	1.71	1,476	.187	.000	.070	.001	.963	1.068
$R^2 =$	.395								
ANOVA F Value =	239.701								
ANOVA Prob. > F =	.000								

Table 18 summarizes and compares the descriptive statistics, correlations with cultural affiliates, and regression results for federal agency and museum cultural affiliation decisions. Like the combined NAGPRA decision model above, the prediction models for federal agency and museum decisions are statistically significant: 1) federal agency; F (4, 370) = 49.730, $p < .0005$, accounting for approximately 35% of the variance in

cultural affiliates ($R^2 = 0.350$ and Adjusted $R^2 = 0.343$); and 2) museum; $F(4, 1{,}096) = 219.857$, $p < 0.0005$, accounting for approximately 45% of the variance in cultural affiliates ($R^2 = 0.445$ and Adjusted $R^2 = 0.443$).

The federal agency matrix indicates human remains, consultants, and evidence types have significant, positive correlations with the number of cultural affiliates, with consultants having the strongest correlation. The number of funerary objects is not a significant predictor for the federal agency model. Consultants (beta = 0.655) are also the major predictor for the museum model, with a lesser contribution from evidence types (beta = 0.065). Similar to the combined model, the federal agency equation is cultural affiliates = 0.139 (human remains) + 0.528 (consultants) + 0.115 (evidence), meaning the number of cultural affiliates is predicted to increase 0.139 when the number of human remains goes up by one, increase 0.528 when the number of Native consultants goes up by one, and increase 0.115 when amount of evidence types goes up by one.

The museum matrix, however, notes there are only significant, positive correlations between consultants and evidence types—with consultants having the stronger correlation. The number of human remains and funerary objects were not significant predictors for the museum model. The museum equation is cultural affiliates = 0.655 (consultants) + 0.065 (evidence), which means the number of cultural affiliates is predicted to increase 0.655 when the number of Native consultants goes up by one, and increase 0.065 when amount of evidence types goes up by one.

Table 18: Summary Multiple Regression Analysis for Federal Agency and Museum Cultural Affiliation Decisions, 1992–2013

Federal Agency

Variable	$\bar{x}$	Std. Dev.	N	Pearson Correlation with Cultural Affiliates	Sig. (1-tailed)	Standardized/Beta Co-efficients	Sig./ P-Value	Tolerance	VIF
Human Remains	45.38	194.63	375	.193	.000	.139	.001	.942	1.061
Funerary Objects	578.85	2396.86	375	.054	.149	.007	.860	.980	1.020
Consultants	7.57	8.85	375	.558	.000	.528	.000	.965	1.036
Evidence Types	6.55	1.57	375	.242	.000	.115	.009	.924	1.082
R^2 =	.350								
ANOVA F Value =	49.73								
ANOVA Prob. > F =	.000								

Museum

Variable	$\bar{x}$	Std. Dev.	N	Pearson Correlation with Cultural Affiliates	Sig. (1-tailed)	Standardized/Beta Co-efficients	Sig. P-Value	Tolerance	VIF
Human Remains	24.33	90.50	1,101	.041	.089	-.018	.455	.899	1.112
Funerary Objects	861.73	7349.34	1,101	-.009	.386	-.015	.518	.917	1.091
Consultants	5.44	6.72	1,101	.664	.000	.655	.000	.969	1.032

Evidence Types	5.99	1.73	1,101	.170	.000	.065	.005	.946	1.058
R^2 =	.445								
ANOVA F Value =	219.86								
ANOVA Prob. > F =	.000								

VII. DISCUSSION OF PRINCIPAL FINDINGS AND CONCLUDING REMARKS

This comprehensive analysis provides the first in-depth understanding of how NAGPRA is implemented. One of the key findings suggests the number of Native consultants engaged in the process is the primary contributor to determining the amount of cultural affiliates. Among other insightful observations, federal agencies and museums relied on Native consultants and evidence types differently, but ultimately arrived at similar figures for the final number of cultural affiliates. Additionally, the chronological and geographic information indicates the bulk of the affiliated human remains derive from the A.D. timeframe and originate from western states. Federal agencies and museums did, however, affiliate human remains from all of the chronological periods and geographic regions of the United States.

Notably, the number of human remains, consultants, and evidence types, which are cultural affiliation information sources, have significant positive correlations with the number of cultural affiliates and do not appear to narrow the determination of affiliates. This is surprising as one likely would expect that the more data available and analyzed, the more precise a final decision would be made (i.e., fewer cultural affiliates determined).

Between 1992 and 2013, 1,422 Notices representing 1,476 decisions culturally affiliating 43,799 human remains and 1,165,838 funerary objects were published in the *Federal Register*.[185] Examination of the affiliation narratives indicates the decision-making institutions consulted broadly, averaging almost six consultants (5.98), and applied a profusion of evidence types, averaging just over six (6.13), to determine the number of cultural affiliates—which averaged nearly four (3.78) with multiple affiliate findings accounting for 53% of the decisions.[186]

The evidence suggests that federal agencies and museums implemented NAGPRA differently. Of the 1,476 affiliation decisions, federal agencies

[185] *See supra* Table 4.
[186] *See supra* Table 5.

accounted for 375 and museums accounted for 1,101.[187] Federal agencies consulted more frequently than museums, averaging over seven (7.57) consultants per determination compared to the museum average of five (5.44).[188] Federal agencies also used moderately more evidence types per decision, averaging over six (6.55) compared to museums almost averaging six (5.99), and found slightly more cultural affiliates, with both institutions averaging almost 4 (3.97 and 3.78 respectfully).[189]

Moreover, federal agencies and museums also differed in their use of certain evidence types. Federal agency decisions used Archaeological, Cultural, Artifact Analysis, and Oral Tradition more frequently than museums.[190] Museums, however, relied on Historical and Documentary evidence more than federal agencies.[191]

The vast majority of the human remains date to the A.D. timeframe (1 A.D.–1950 A.D.). Indeed, the combined federal agency and museum decisions included 30,543 human remains from the A.D. period (or 70% of all affiliated human remains).[192] As expected, therefore, federal agencies and museums affiliated substantially more human remains from the A.D. category than any other temporal type. Additionally, neither institution affiliated many human remains from the "14,000–1 B.C." period, with federal agencies accounting for more affiliated B.C. remains (110 compared to 22 for museums) but museums issuing more decisions (10 compared to 4 for federal agencies).[193] The second largest number of affiliated remains is from the Unknown chronology category. Despite lacking any chronological information, federal agencies culturally affiliated 2,159 human remains and museums affiliated 5,189.[194]

Interestingly, the chronological information and associated decision components for the affiliated and culturally unidentifiable human remains and funerary objects are very similar—including the figures for consultants and evidence types. The percentage of Unknown chronology decisions is higher for the culturally unidentifiable determinations, but federal agencies and museums also affiliated numerous human remains and funerary objects with no temporal information. Federal agencies and museums also determined human remains and funerary objects were culturally

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[187] *Id.*

[188] *See supra* note 129.

[189] *See supra* notes 134, 135.

[190] *See supra* notes 134-136, 143.

[191] *See supra* notes 142-143.

[192] *See supra* Table 8.

[193] *Id.* Museums determined most of their human remains from the BC period (165) were culturally unidentifiable. *See supra* Table 9.

[194] *Id.*

unidentifiable despite possessing basic chronological information, engaging numerous consultants, and averaging at least five evidence types.[195] Arguably, these remains and cultural items could just as easily have been culturally affiliated.

Geographically, most of the federal agency affiliated, A.D. period human remains (12,636 or 93%) derive from western states, followed by southern (6% or 808), mid-western (1% or 119), and north-eastern (0.4% or 63) states. Museums have more geographic variation, with the bulk of their A.D. remains also coming from western states (47% or 8,011), followed by mid-western (23% or 3913), southern (19% or 3,181), and north-eastern (11% or 1,783) states. With the exception of the federal agency B.C. period remains being recovered in Kentucky, most of human remains from the other temporal categories were recovered from western states with a smattering from other regions. Additionally, 2% (96) of the museum affiliated human remains are from the Unknown chronology category and lack provenance. It also should be noted that few to no human remains were reported as coming from several states, including Alabama (139), Connecticut (24), Delaware (0), Florida (288), Illinois (195), Indiana (12), Kentucky (102), Maryland (0), Ohio (8), South Carolina (27), Tennessee (102), and Vermont (2).[196]

Analysis of the number of human remains, funerary objects, consultants, and evidence types to determine how any of these factors might influence the number of cultural affiliates suggests the primary predictor is Native consultants. When the combined NAGPRA decisions and decisions by federal agency and museum were examined, the primary positive contributor to and predictor of cultural affiliates is the number of consultants for all three regression models.[197] Additionally, the number of funerary objects is not a significant contributor to cultural affiliates for the same three models. The combined and federal agency models also indicate human remains, consultants, and evidence types have significant, positive correlations with the final number of cultural affiliates. The museum model, however, notes only consultants and number of evidence types have significant, positive correlations with culturally affiliated remains. Interestingly, none of the examined factors, which are essentially affiliation information sources, worked to reduce the number of cultural affiliates.[198]

Returning to the NAGPRA criticisms identified in the introductory section, the analyses in this paper provide some insightful information and reasonable responses. With respect to cultural affiliation decision

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[195] *See supra* Tables 8 and 9.
[196] *See supra* Table 11.
[197] *See supra* Tables 17 and 18.
[198] *Id.*

thoroughness, the reviewed Notices appear to be sufficient under the Act—providing a description of the federal agency and museum cultural affiliation decisions based on a preponderance of the evidence. They are not intended to be comprehensive scientific reports, which federal agencies and museums might produce separately to support their decisions summarized in the Notices. Moreover, most of the human remains (43,799) and funerary objects (1,165,838) were culturally affiliated and published in Notices for repatriation as opposed to being found culturally unidentifiable (4,964 human remains; 8,363 funerary objects) and included in disposition decisions.[199] Concerning heightening affiliation standards to undermine repatriation, this review found no evidence to support the claim. Instead, it determined federal agencies and museums liberally decided cultural affiliation within a wide range of evidence type usage.[200]

Multiple cultural affiliation decisions were common for both federal agencies and museums, but they did not appear to be excessive. The Notices provided explanations for the multiple affiliate decisions, and no patterns were identified demonstrating federal agencies or museums used multiple cultural affiliations to violate the Act (e.g., cast an overly wide net to obtain enough evidence to find cultural affiliation). Although this paper did not identify direct evidence that institutions thwart the Act by purposefully deciding human remains are culturally unidentifiable, it takes the position that cultural unidentifiable decisions should be reserved only for the human remains and other cultural items that lack any context.

The study also demonstrates oral tradition evidence is not overly used, nor is it ignored. While there are usage differences between the various decision-making institutions, there is no demonstrable evidence oral tradition is being suppressed or overly promoted.[201] Furthermore, oral tradition is always used in conjunction with other evidence, and there is no instance when an institution solely relied on it to justify cultural affiliation.

Similarly, there is no evidence to support a claim Native Americans are not consulted on repatriation decisions included in published Inventory Notices.[202] Based on the number of consultants per decision, federal

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[199] *See supra* Tables 2 and 4.

[200] *See supra* Table 5 (averaging about 6 evidence types for all repatriation decisions); *supra* Table 6 (using a variety of evidence types at different percentages); *supra* Table 8 (demonstrating different evidence type averages by chronology).

[201] *See supra* Tables 6, 7, and 13.

[202] The NAGPRA regulations require federal agencies and museums to include the results of Native American consultation efforts in their inventory documentation. *See*, 43 C.F.R. 10.9(c)(4). There are concerns, however, that decisions finding human remains and funerary objects culturally unidentifiable were made without Native consultation. Indeed, as of August 2015, the NAGPRA Review Committee noted 261 federal agencies and museums did not provide consultation evidence when they determined 18,576 human remains and

agencies (averaging almost 8) and museums (averaging just over 5) appear to have consulted broadly.[203]

Although the majority of the decisions involved human remains from the A.D. timeframe, federal agencies and museums did make repatriation and disposition decisions for ancient human remains.[204] This study did not identify any decisions that were inconsistent with the law.

A. Issues for Future Inquiry

This paper examined the implementation of NAGPRA to gauge its effects twenty-five years after enactment. The robust baseline data and decision analyses it provides allows for greater scrutiny of decision-making institution actions and an opening to improve the process. One potential application is to use the number of evidence types, chronology, and provenance data from the affiliated decisions to reassess the status of approximately 131,476 human remains and 1,153,372 funerary objects determined to be culturally unidentifiable and tracked on the National NAGPRA Office's culturally unidentifiable database.[205] Comparing temporal and geographic information from the affiliated remains with comparable data from culturally unidentifiable remains will assist federal agencies and museums identifying prospective Native consultants. Engaging these consultants in conjunction with the corresponding affiliation decision evidence might switch many of the unidentifiable remains to affiliated status and clear a path for their repatriation.[206]

A practical starting point for an affiliation reassessment could begin with a National NAGPRA Office report detailing the culturally unidentifiable determined human remains from six states—Alabama, Florida, Ohio, Tennessee, Kentucky, and Illinois.[207] The report notes that at the time of its

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164,312 funerary objects were culturally unidentifiable. *See*, NAGPRA Review Committee Annual Report to Congress at 5 (2015), http://www.nps.gov/nagpra/REVIEW/Reports_to_Congress/RTC_Mar2016.pdf (visited Mar. 25, 2016).

[203] *See supra* Table 5.

[204] *See supra* Tables 8, 9, 11, 14.

[205] *See National NAGPRA Online Databases*, NAT'L PARK SERV., http://www.nps.gov/nagpra/ONLINEDB/index.htm. (last visited Dec. 27, 2015) (detailing 18,060 records describing 131,457 Native American human remains, of which 7,681 had been culturally affiliated since they were first inventories a culturally unidentifiable, and 1,153,372 associated funerary objects inventoried by 752 museums and federal agencies).

[206] A lack of Native consultation during the cultural affiliation decision-making process might have resulted in a large number of human remains and funerary objects being categorized as culturally unidentifiable. *See* NAGPRA Review Committee Annual Report to Congress, 2015.

[207] *See* Andrew Kline, *Who are the Culturally Unidentifiable?*, NAT'L PARK SERV. (Mar.

drafting in February 2007, the six reviewed states were the source of 53,182 culturally unidentifiable human remains or about 45% of the total designated culturally unidentifiable remains in the United States.[208] Using general archaeological chronologies, the report provided a projected temporal context for these remains with the following breakdown: 1) Prehistoric (15,000 B.C.–8,000 B.C.) = 3,478 or 7%; 2) Archaic (8,000 B.C.–1,000 B.C.) = 12,764 or 24%; 3) Woodland (1,000 B.C.–1,000 A.D.) = 13,252 or 25%; 4) Mississippian (1,100 A.D.–1,400 A.D.) = 15,554 or 29%; 5) Historic (1,500 A.D.–1,715 C.E.) = 2,127 or 4%; and 6) No Information = 5,678 or 11%.[209] While the 16,242 culturally unidentifiable human remains from the older Prehistoric and Archaic timeframes, which in this study span the B.C. period (15,000 B.C.–1,000 B.C.), would be difficult to culturally affiliate, the 30,933 from the Woodland, Mississippian, and Historic categories, which primarily fall into the A.D. (1 A.D.–1950 A.D.) period for this paper, are potentially reversible.

The repatriation analyses by chronology[210] in this study indicate cultural affiliation within the A.D. timeframe is common and includes human

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22, 2007), http://www.nps.gov/nagpra/REVIEW/Who%20are%20the%20Culturally%20Unidentifiable.pdf (requested by the NAGPRA Review Committee).

[208] *See id.*

[209] *See id.* at 11. Note, the report only provided percentages for the Archaic and Historic culturally unidentifiable human remains. These percentages were converted into whole numbers.

[210] To assist the comparison of chronological data for human remains in the National NAGPRA Office's culturally unidentifiable report with the chronology of culturally affiliated human remains in this study, the following table is provided:
Combined Federal Agency and Museum Culturally Affiliated Human Remains and Funerary Objects by Chronology from 1000 B.C.-1899 A.D., 1992-2013

Detailed Chronology: 1000 B.C. – 1899 A.D.	**Human Remains**	**Funerary Objects**
1,000 B.C. – 1 B.C.	8	3
1,000 B.C. – 999 A.D.	330	6,462
1,000 B.C. – 1499 A.D.	158	1,996
1,000 B.C. – 1699 A.D.	193	1,938
1,000 B.C. – 1899 A.D.	1,116	37,975
1 A.D. – 999 A.D.	226	3,012
1 A.D. – 1499 A.D.	8,193	298,912
1 A.D. – 1699 A.D.	1,933	32,550
1 A.D. – 1899 A.D.	2,725	37,602
1000 A.D. – 1499 A.D.	4,581	23,037
1000 A.D. – 1699 A.D.	1,655	11,566
1000 A.D. – 1899 A.D.	4,100	106,847
1500 A.D. – 1699 A.D.	1,106	45,481

remains from every U.S. region and archaeologically defined cultures—such as Mississippian,[211] Woodland,[212] Archaic,[213] etc. Identifying similar repatriation decisions previously published in *Federal Register* Notices can be used to ascertain likely Native American consultants, which this study demonstrated is the driving contributor for determining the number of cultural affiliates, and as sources of used evidence types [214] as well as precedence.[215] Given the almost twenty-five years of available NAGPRA

1500 A.D. – 1899 A.D.	1,634	106,847
1700 A.D. – 1899 A.D.	3,966	287,690
1000 B.C.-1899 A.D. Total:	**31,924**	**1,001,918**

Note: The table only reports data that that falls between 1000 B.C.-1899 A.D. and does not include human remains and funerary objects from broader chronological timeframes, such as 6,000 B.C.-1899 A.D.

[211] Cultural affiliation decision to repatriate 60 human remains and six funerary objects from Georgia dating to the Mississippian Period (1350 A.D.–1700 A.D.). *See* Fernbank Museum of Natural History, Atlanta, GA, 74 Fed. Reg. 42,098 (Aug. 20, 2009). Another cultural affiliation decision repatriated 404 and 187,060 funerary objects from the Etowah Mounds site in Georgia that date to 800 A.D.-1400 A.D. *See* Georgia Department of Natural Resources, Atlanta, GA, 74 Fed. Reg. 12896 (Mar. 25, 1999).

[212] Cultural affiliation decision to repatriate three human remains from New Hampshire dating to the Woodland Period (1,000 B.C.-1500 A.D.) and three human remains with ten funerary objects from another New Hampshire site also dating to the Woodland Period (6,540 B.C.-1500 A.D.). *See* Human Remains and Associated Funerary Objects in the Control of Franklin Pierce College, Rindge, NH; Manchester Historic Association, Manchester, NH; New Hampshire Division of Historical Resources, Concord, NH; and University of New Hampshire, Durham, NH; and in the Possession of the New Hampshire Division of Historical Resources, Concord, NH, 67 Fed. Reg. 45,536 (Jul. 9, 2002).

[213] Cultural affiliation decision to repatriate 96 human remains and 32 funerary objects from Kentucky dating to the Middle and Late Archaic Periods (7,000 B.C.-3,000 B.C.). *See* National Guard Bureau/A7AN, Air National Guard, Joint Base Andrews, MD, 78 Fed. Reg. 11676 (Feb. 19, 2013).

[214] Evidence types relied on for affiliation were not necessarily novel and many heavily relied on museum collection records as the primary source for determining repatriation. *See* Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, MA, 76 Fed. Reg. 62842 (Oct. 11, 2011); Museum of Anthropology, University of Michigan, Ann Arbor, MI, 76 Fed. Reg. 36,151 (Jun. 21, 2011); American Museum of Natural History, New York, NY, 66 Fed. Reg. 20,330 (Apr. 20, 2001); Peabody Museum of Archaeology, Andover, MA, 66 Fed. Reg. 22,253 (May 3, 2001); Phoebe Hearst Museum of Anthropology, University of California-Berkeley, Berkeley, CA, 66 Fed. Reg. 30,227 (Jun. 5, 2001); American Museum of Natural History, New York, NY, 67 Fed. Reg. 13,649 (Mar. 25, 2002); Phoebe A. Hearst Museum of Anthropology, University of California, Berkeley, Berkeley, CA, 67 Fed. Reg. 45,998 (Jul. 11, 2002).

[215] Institutions partially relied on other institution's *Federal Register* published decisions in determining cultural affiliation. *See* Fernbank Museum of Natural History, Atlanta, GA, 74 Fed. Reg. 42,098 (Aug. 20, 2009); Memphis Pink Palace Museum, Memphis, TN, 75 Fed. Reg. 52,367 (Aug. 25, 2010).

records, a revaluation of the repatriation data should result in a surge in cultural affiliations from the ranks of the initially designated culturally unidentifiable.[216]

[216] Those few remains that cannot be culturally affiliated, which likely lack any chronology, associated funerary objects, and other evidence producing context, would still be subject to disposition pursuant 43 C.F.R. § 10.11.

Agricultural "Market Touching": Modernizing Trespass to Chattels in Crop Contamination Cases

Adam J. Levitt* and Nicole E. Negowetti**

ABSTRACT

The dissemination and mishandling of genetically—engineered ("GE") crop varieties has serious consequences for the commodity crop market and public health. Litigation has been brought against Syngenta following China's rejection of that company's MIR 162 corn strain, resulting in China banning all U.S. corn imports. As a result of China's ban, the price of U.S. corn and corn futures plummeted. The tort of trespass to chattels should be applied to reflect the modern market reality that introducing a GE trait into another crop market, as through cross-pollination or commingling, results in market-wide price effects. This Article proposes a broad and modernized interpretation of the trespass to chattels tort, to address this type of market loss in the agricultural arena. The GE variety's pollination or commingling in transportation or storage of *some* crops within the affected crop market constitutes "indirect touching" of *all* crops within that interconnected market. Thus, a trespass to chattels claim should be available to growers in the market affected by the GE variety, with damages measured as the reduction in price over the period affected, and without the need for individual growers to establish, through genetic testing or by other means, physical touching of their crops by GE crops through pollination or commingling.

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* Director, Grant & Eisenhofer P.A. and head of Grant & Eisenhofer's Consumer Protection and Products Liability Litigation Group.

** Associate Professor of Law, Valparaiso University Law School. The authors thank Edmund S. Aronowitz, Robert F. Blomquist, Peter C. Carstensen, Jason L. Lichtman, Catherine J. Ó Súilleabháin, John E. Tangren, Meagan Vianello, and Spencer Weber Waller for their helpful comments and suggestions.

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I. INTRODUCTION

Genetic modifications to U.S.-grown crops through genetic engineering have far-reaching implications for U.S. farmers and all others in the commodity crop production and distribution system. The dissemination and mishandling of genetically-engineered ("GE") crop varieties has serious consequences for the market and public health. In 2000, Aventis' genetically-engineered StarLink corn, restricted by U.S. agencies for use as animal feed and in industrial applications, wound up in the human food supply, possibly as the result of pollination among farms or commingling during storage or transport.[1] This contamination of the corn supply resulted

[1] *StarLink Corn: A Cautionary Tale*, FEDERATION OF AMERICAN SCIENTISTS (2011), http://fas.org/biosecurity/education/dualuse-agriculture/2.-agricultural-biotechnology/starlink-corn.html.

in a collapse of U.S. corn exports and sent U.S. corn prices plummeting.[2] Similarly, in 2006, trace amounts of an experimental—and commercially unapproved—LibertyLink rice strain produced by Bayer were found in the U.S. long-grain rice supply, precipitating a broad worldwide rejection of U.S. long-grain rice and a substantial drop in U.S rice prices.[3] Presently, U.S.-based litigation is ongoing against Syngenta following China's rejection of that company's MIR 162 corn strains from the United States, resulting in China's ban on U.S. corn imports, which had a concomitant detrimental and market-wide effect on the price of U.S. corn and corn futures.[4]

No statutory or tort claims readily address the losses faced by growers upon market reversals occasioned by deliberate or inadvertent release of genetically-engineered crop strains into U.S. markets of grain designated for human consumption. For example, common law negligence may be insufficient or an inappropriate remedy in the agricultural scenario, given the interplay between that tort and the applicability of the economic loss doctrine, which precludes recovery for economic losses when unaccompanied by personal injury or property damage. Similarly, nuisance may be insufficient in the agricultural context because it does not address negative market effects on growers. The authors propose that, given the market effects of genetic engineering of crops in the modern day, the tort of trespass to chattels provides an appropriate remedy for losses caused by wrongful dissemination of genetically-engineered crops by patent holders, seed companies, and other licensees. Although seldom used today, trespass to chattels historically recognized the right to recover damages as measured by the impairment of the value of one's "chattel," or tangible personal property, owing to an intentional physical touching or intermeddling with that property, resulting in the owner's dispossession of, or a physical change to, the property. Over time, trespass to chattels was modestly expanded, as courts came to apply it in cases of harm to interests or property other than the chattel directly "touched" by the alleged wrongdoing. Recently, courts have upheld trespass to chattels claims in the cyberspace context by recognizing that unauthorized use of another's

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[2] *StarLink Corn Woes Cut U.S. Farm Exports*, REUTERS (Mar. 31, 2001), http://www.iatp.org/news/starlink-corn-woes-cut-us-farm-exports.

[3] Marc Gunther, *Attack of the Mutant Rice*, FORTUNE (July 2, 2007), http://archive.fortune.com/magazines/fortune/fortune_archive/2007/07/09/100122123/index.htm.

[4] *See* StarLink Corn Prod. Liab. Litig. v. Aventis CropScience USA Holding, Inc., 212 F. Supp. 2d 828 (N.D. Ill. 2002); *In re* Syngenta AG MIR162 Corn Litig., Case Nos. MDL 2591, 14-MD-2591-JWL, 2015 WL 5607600 (D. Kan. Sept. 11, 2015); *In re* Genetically Modified Rice Litig., 666 F. Supp.2d 1004 (E.D. Mo. 2009).

servers or networks for purposes such as the propagation of "spam" may give rise to trespass to chattels even where the touching is intangible (made through intangible electronic signals, rather than through physical touching of another's chattel), and even though the resulting damage does not result in a physical, or even a permanent, impairment of the chattel or other property.[5]

The authors argue that the elements of the tort of trespass to chattels should be more broadly interpreted and applied to address modern problems in the agricultural arena. Courts have already recognized that "indirect" rather than physical touching of physical property may serve as the basis for a trespass to chattels claim. Moreover, in the cyberspace context, trespass to chattels has been recognized as a remedy where both a defendant's "touching" of chattels and the resulting "damage" are non-physical. Similarly, the claim should be applied in a manner that reflects the modern market reality that introducing a genetically-engineered trait into another crop market, as through cross-pollination or commingling, results in a market-wide price effect. The genetically-engineered variety's pollination or comingling in transportation or storage of *some* crops within the affected crop market constitutes "indirect touching" of *all* crops within that interconnected market. Stated differently, the discovery of dissemination of genetically-engineered crops that directly or indirectly taints other crops results in direct harm to all crops within the crop market, and the measure of damages to growers seeking to sell in that market is generally the reduction in crop price. Thus, a trespass to chattels claim should be available to growers in the market affected by the taint with the genetically-engineered variety, with damages typically measured as the reduction in price over the period affected and without the need for individual growers to establish, through genetic testing or by other means, that specific crops or crop volumes were physically touched, directly or indirectly, by the genetically-engineered variety as through pollination or commingling.

Part II of this Article discusses private tort litigation involving crop contamination. The facts of these cases demonstrate the appropriateness of expanding the trespass to chattels tort to recognize a remedy for crop growers facing market loss due to crop contamination by genetically-engineered crop varieties. Part III briefly explains commodities pricing to aid an understanding of crop contamination's market-wide effects. Part IV discusses why negligence and nuisance are insufficient to address the harm resulting from negative market effects caused by commodity crop contamination. Part V explains the historical background of the trespass to chattels tort and summarizes each element of the tort, which generally

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[5] *See infra* Part V(B)-(C).

includes intentional physical contact resulting in actual, substantial harm to chattels. It also discusses the expansion of the tort of trespass to chattels in cyberspace cases involving email spam and robotic spiders. Part VI proposes an expanded and modernized trespass to chattels tort in agricultural "market touching" cases. The authors argue that a trespass to chattels claim as properly applied in the genetically-engineered crop context should require a plaintiff to prove: (1) that GE seed patent holders intended intermingling of their genetic trait within the commodity supply chain; (2) that commodity supply chain intermingling occurred; and (3) that a commodity price drop occurred, causing damages to all commodity producers. Doctrinal stretching of trespass to chattels is appropriate to address this modern problem of market-wide price declines due to the "touching" of crops by the genetically-engineered variety through pollination, commingling, or other contamination.

II. OVERVIEW OF THE AGRICULTURAL CROP CONTAMINATION/MARKET LOSS CASES: *STARLINK, LIBERTYLINK RICE, SAMPLE V. MONSANTO,* AND *SYNGENTA/MIR 162 CORN*

The case law regarding the applicability of trespass to chattels to claims by farmers and growers regarding the effects of genetically-engineered crops is scant, and trespass to chattels claims have seldom been applied in this context. The first instance of private tort litigation involving GE crop contamination was In re *StarLink Corn Products Liability Litigation.*[6] The facts of *StarLink* illustrate the appropriateness of expanding trespass to chattels to recognize a remedy for growers of crops facing a direct harm—depressed pricing within the market—as the result of the tainting of crops within that market with genetically-engineered crop varieties.

StarLink is the trademark for a yellow corn variety that reflects a genetic modification to express the pesticidal protein Cry9C.[7] The variety was developed with the intent of avoiding the need to treat crops of this variety with chemical pesticides.[8] Aventis CropScience, Inc. applied for federal approvals of StarLink under the Federal Insecticide, Fungicide, and Rodenticide Act ("FIFRA") and the Federal Food, Drug, and Cosmetic Act ("FDCA").[9] In 1998, the U.S. Environmental Protection Agency ("EPA"), unable to rule out the possibility that Cry9C was a human allergen, approved StarLink for commercial use only, requiring that all grain derived

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[6] *See In re* StarLink Prods. Liab. Litig., 212 F. Supp. 2d at 828.

[7] U.S. EPA, *Starlink Corn Regulatory Information,* https://www3.epa.gov/pesticides/chem_search/reg_actions/pip/starlink_corn.htm (Apr. 2008) [hereinafter *Starlink*].

[8] *Id.*

[9] *Id.*

from StarLink corn be used only for domestic animal feed or for industrial purposes such as biofuels.[10] Segregation was crucial. Corn pollen can travel to distant farms and corn varieties within a farm regularly cross-breed. Corn from thousands of farms is commingled through harvesting, storage, and shipment to grain elevators, which do not segregate corn varieties.[11] Given the high risk of commingling StarLink corn with other varieties, the EPA mandated segregation procedures for cultivation, harvesting, storage, and transport, and required a wide "buffer zone" around StarLink corn crops to prevent cross-pollination of non-StarLink corn plants.[12] Aventis was responsible for informing farmers of the segregation procedures and restrictions on use, as well as for instructing growers how to store and dispose of StarLink seeds and plants and for ensuring purchasers' written agreement to these terms.[13]

Despite the limitation on approval and the requisite precautions, StarLink corn was found in taco shells in September 2000, and later in other foods intended for human consumption.[14] Many U.S. food producers stopped using U.S. corn, and countries such as South Korea and Japan terminated or limited U.S. corn imports.[15] Growers filed numerous lawsuits, and the Panel for Multidistrict Litigation consolidated them in the Northern District of Illinois.[16] Defendants, Aventis CropScience USA Holdings, Inc. ("Aventis") and Garst Seed Company (a licensee that produced and distributed the seeds), moved to dismiss the growers' actions for negligence *per se,* public nuisance, private nuisance, and conversion.[17] Importantly for a trespass to chattels theory, the court characterized "the contamination of plaintiffs' corn supply [a]s a physical injury," and a "harm to property," in that plaintiffs' crops were themselves contaminated.[18] On the other hand, the court cautioned that although plaintiffs alleged defendants contaminated the entire U.S. corn supply, recovery by any plaintiff depended on its ability to prove "direct harm" to its own crops.[19] The court also expressly declined to determine whether defendants' alleged acts could also give rise to consequential damages.[20]

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[10] *Id.*
[11] *In re* StarLink Prods. Liab. Litig., 212 F. Supp. 2d at 834.
[12] *Id.*
[13] *Id.*
[14] *Starlink, supra* note 7.
[15] *In re* StarLink Prods. Liab. Litig., 212 F. Supp. 2d at 835.
[16] *Id.* at 833.
[17] *Id.* at 835.
[18] *Id.* at 842.
[19] *Id.* at 843.
[20] *Id.*

The court denied the motion to dismiss as to all tort claims except conversion, and ruled that Plaintiffs could "proceed on the theory that defendants (1) violated duties imposed by the limited registration [of StarLink]; (2) made representations to StarLink growers that contradicted the EPA-approved label; and (3) failed to inform parties handling StarLink corn downstream of the EPA-approved warnings."[21] The court recognized that defendants had a duty to ensure that StarLink did not enter the human food supply, and observed that liability would lie if plaintiffs established that Aventis' breach of that duty caused plaintiffs' corn to be contaminated.[22] Importantly, defendants argued that plaintiffs had alleged only a market-wide harm, but the court gave plaintiffs the benefit of the ambiguity, and "read the complaint to allege *direct harm* to plaintiffs' corn, . . . a set of facts that is consistent with plaintiffs' allegations about the impact on the corn system as a whole."[23]

In dismissing plaintiffs' conversion claim, the court noted that plaintiffs might have prevailed on a trespass to chattels claim.[24] While "commingling fungible goods so that their identity is lost can constitute a conversion," the alteration of the corn as alleged was not "'so material as to change the identity of the chattel or its essential character,'" because the corn crops were still "viable for the purpose for which plaintiffs would normally use them, for sale on the open market."[25] Acknowledging the diminution in value plaintiffs would receive on that market, however, the court suggested that a trespass to chattel claim would have been apt: "the severity of the alteration is indicated by the decrease in market price. This could arguably constitute a trespass to chattels, but does not rise to the level of conversion."[26]

Further, the court reasoned that the economic loss rule (providing that damages for economic harm are not recoverable in tort but only in contract) does not bar claims for damages resulting from injury to "other property" (that is, property other than that containing the defect, StarLink corn), nor claims alleged in combination with non-economic losses.[27] The court recognized that damage to plaintiffs' non-StarLink corn may have resulted from such means as (1) pollination by Star Link corn, causing the development of the Cry9C protein, or (2) commingling with StarLink corn, at which point segregation between the varieties is impossible and "[t]he

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[21] *Id.* at 838.

[22] *Id.*

[23] *Id.* at 843 (emphasis added).

[24] *Id.* at 844.

[25] *Id.* (citing RESTATEMENT (SECOND) OF TORTS § 226 (1965)).

[26] *Id.*

[27] *Id.* at 840.

entire batch is considered tainted and can only be used for the domestic and industrial purposes for which StarLink is approved."[28] According to the court, contamination of plaintiffs' crops by either means would render the economic loss rule inapplicable.[29]

After the dismissal motion was largely denied, the corn farmer class settled for over $110 million.[30] In *StarLink*, the plaintiffs' lawyers, working with their lead economist, Dr. Colin Carter, of the University of California, Davis, developed the first agricultural market loss theories that formed the basis for damages there, as well as in the several cases that followed.[31] In addition, the case confirmed that tort theories, such as negligence and nuisance, among others, were all theories under which a company that markets genetically-engineered seeds or traits might be liable for resulting market loss and related damages if the product adversely affects conventional growers and markets.[32]

In *Sample v. Monsanto Co.*, in addition to antitrust claims brought on behalf of growers of genetically-engineered soybean and corn seeds, conventional (or non-GE) growers also asserted separate tort claims against Monsanto, alleging damages under public nuisance and negligence theories as a result of Monsanto's introduction of GE corn and soybean seeds into the market, which then commingled with, and contaminated, the domestic grain channel.[33] The court granted summary judgment in Monsanto's favor on the plaintiffs' tort claims, holding that the economic loss rule (which prohibits solely economic damages claimed from certain torts) barred those claims.[34] Moreover, although not part of the court's analysis, unlike

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[28] *Id.* at 841.

[29] *Id.* at 842–43. Note, however, that the court's emphasis on the requirement to show harm to plaintiffs' own crops to avoid application of the economic loss rule may suggest an implicit rejection of the notion of "market touching" to support the tort. For if avoiding the applicability of the economic loss rule requires plaintiffs to show "direct harm" to the specific crops whose prices are falling, a negative test for the offending protein or other genetic modification would appear to relieve defendants of market-wide liability, even where their actions occasion a market-wide price decline. As noted above, the court declined to consider the availability of consequential damages. *Id.* at 843.

[30] Paul Elias, *Biotech Firms will Pay $110 Million to Settle StarLink Corn Lawsuit,* TOPEKA CAPITAL J. (Feb. 07, 2003), http://cjonline.com/stories/020703/usw_biotech.shtml#.VwTVbBMrKK4. Contemporaneously with the *StarLink* corn farmers' settlement, the defendants in that action also settled a smaller consumer class action case, brought on behalf of purchasers of food products containing StarLink corn and who may have been exposed to potential allergens therein, for $9 million.

[31] *See In re* Genetically Modified Rice Litig., 4:06 MD 1811 CDP (E.D. Mo. Dec. 14, 2007) (Declaration of Colin A. Carter, Ph.D.) [hereinafter Colin A. Carter Decl.].

[32] *See infra* Part VII.

[33] 283 F.Supp.2d 1088, 1090 (E.D. Mo. 2003).

[34] *Id.* at 1093 n.2.

StarLink, the United States Department of Agriculture had approved the soybean and corn GE products at issue in *Sample* for human consumption.[35]

One of the largest and most successful of these cases to date has been In re *Genetically Modified Rice Litigation*.[36] In that case, attorneys representing thousands of rice producers and dozens of rice-related businesses (such as elevators and exporters) sued various foreign and domestic Bayer entities, including Bayer CropScience and Bayer AG, after unapproved, genetically-engineered rice was discovered in the U.S. long-grain rice supply.[37] After denying the Bayer defendants' dismissal motions, the judge presiding over the litigation denied class certification, concluding that "[i]ndividual circumstances affecting the calculation of individual plaintiffs' damages predominate over the common issues presented in plaintiffs' claims."[38]

Unlike many other class action cases where class certification denial is effectively a "death knell" for the case,[39] when class certification was denied in this litigation, the case proceeded as a mass tort because the merits of the case remained strong and the damages of many individual plaintiffs were substantial.[40] Following a series of bellwether trials, each of which resulted in a plaintiff's verdict or midtrial settlement, in July 2011, the Bayer defendants settled the cases as a mass tort for $750 million, with subsequent related settlements increasing the aggregate settlement amount to close to $1.1 billion.[41]

Most recently, corn farmers, grain elevator operators, and producer/exporters of corn and distiller's dried grains with solubles ("DDGS") among others have alleged that they suffered significant losses as a result of Syngenta's release of a genetically-engineered corn trait (known commercially as "Agrisure Viptera" and "Agrisure Duracade" or

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[35] *See id.*

[36] 251 F.R.D. 392, 393 (E.D. Mo. 2008).

[37] *Id.*

[38] *Id.* at 400.

[39] An order denying a class certification motion in its entirety, and preserving for the plaintiff alone his cause of action for damages, "is in legal effect a final judgment from which an appeal lies" because it "virtually demolishe[s] the action as a class action" and "prevents further proceedings as effectually as would any formal judgment." Daar v. Yellow Cab Co., 433 P.2d 732, 736 (Cal. 1967) (quoting Herrscher v. Herrscher, 259 P.2d 901, 903 (Cal. 2008)).

[40] *In re* Genetically Modified Rice, 251 F.R.D. at 396.

[41] Mike Cherney, *Bayer Reaches 1st Settlement in Rice MDL*, LAW 360 (Oct. 20, 2010), http://www.grgpc.com/Bayer_1st_settlement.pdf; David Beasley & Andrew Harris, *Bayer will Pay $750 Million to Settle Gene-Modified Rice Suits*, BLOOMBERG (July 1, 2011), http://www.bloomberg.com/news/articles/2011-07-01/bayer-to-pay-750-million-to-end-lawsuits-over-genetically-modified-rice.

"MIR162") into the U.S. corn production system.[42] In particular, these plaintiffs allege that Syngenta's commercialization of MIR162 without Chinese approval of the corn led China (one of the top importers of U.S. corn) to essentially ban the importation of *all* U.S. corn and DDGS in late 2013, with such prohibitions lasting more than a year.[43] These plaintiffs further allege that Syngenta downplayed the importance of the Chinese market to U.S. corn farmers and misrepresented that Chinese approval of MIR162 was imminent, thus fraudulently encouraging farmers to plant this unapproved trait.[44] These misrepresentations, combined with Syngenta's promotion of negligent growing practices that necessarily resulted in the cross-contamination and commingling of MIR 162 corn with other corn, further exacerbated serious trade disruptions after China stopped U.S. corn imports.[45] China's actions then led to lower prices for U.S. commodity corn across the board, as domestic supplies backed up and thus increased costs for U.S. elevator operators and exporters.[46] The plaintiffs further allege that Syngenta's actions with respect to MIR 162 corn, while profitable for Syngenta, caused widespread damage to a large number of stakeholders in the U.S. corn marketing system, thousands of whom have recently filed lawsuits in different courts around the country seeking to hold Syngenta accountable for its wrongful acts.[47] Significantly, in largely sustaining the plaintiffs' complaints in the face of the Syngenta defendants' dismissal motions, the Honorable John W. Lungstrum of the United States District Court for the District of Kansas, the JPML transferee court for this litigation, focused, in part, on the plaintiffs' allegations of the "relationship between the parties in an interconnected market" and the effects of that interconnected reality on the viability of those plaintiffs' claims.[48]

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[42] *In re* Syngenta AG MIR 162 Corn Litigation, 131 F.Supp.3d 1177, 1186 (D. Kan. 2015).

[43] *Id.* China granted import approval to Viptera corn on December 22, 2014. *See* Paul Minchart, *Syngenta receives Chinese import approval for Agrisure Viptera® corn trait*, SYNGENTA US (Dec. 22, 2014), http://www.syngentacropprotection.com/news_releases/news.aspx?id=187482.

[44] *In re* Syngenta AG MIR 162 Corn Litigation, 131 F.Supp.3d at 1186.

[45] *Id.*

[46] *See id.*

[47] *Id.*

[48] *Id.* at 1192; *see also id.* at 1189 ("The parties were not strangers, but rather were part of an inter-connected industry and market, with expectations on all sides that manufacturers and growers and sellers would act at least in part for the mutual benefit of all in that inter-connected web.").

III. OVERVIEW OF COMMODITIES PRICING

Most grain crops are traded in both the futures and the cash markets.[49] In the futures market, contracts for future delivery are traded on a commodity exchange, such as the Chicago Board of Trade ("CBOT"), and are for a specific contract delivery month, location, grade of crop, and quantity.[50] Generally, a futures contract is a standardized agreement between two parties to purchase or sell a predetermined quantity of a commodity in the future at a price determined at the initiation of the contract.[51] Market participants may settle a futures contract through delivery of the commodity, or by "offsetting" the transaction by entering into the equal and opposite trade.[52] In the cash market, physical grain is purchased and sold by country elevators and other entities.[53] The local cash price a grower receives may reflect both the futures price and the local basis.[54] The basis "reflects the equilibrium condition between the supply of grain in the local market and the demand for grain."[55] For farmers, the basis typically dictates the best times to sell grain, the type of marketing alternative to use in selling harvested crops (i.e., futures, options, a cash sale, or a combination of these), and when to accept a buyer's bid.[56]

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[49] Don Hofstrand & Robert Wisner, *Grain Price Hedging Basics*, IOWA STATE UNIVERSITY EXTENSION AND OUTREACH AG DECISION MAKER (July 2015), https://www.extension.iastate.edu/agdm/crops/html/a2-60.html.

[50] CME GROUP, *Self-Study Guide to Hedging with Grain and Oilseed Futures and Options* 4 (2015), http://www.cmegroup.com/trading/agricultural/files/grain-oilseed-hedgers-guide.pdf.

[51] *Id.* at 5.

[52] *Id.*

[53] Hofstrand & Wisner, *supra* note 49.

[54] *Id.*

[55] Mykel R. Taylor, Kevin C. Dhuyvetter & Terry L. Kastens, *Forecasting Crop Basis Using Historical Averages Supplemented with Current Market Information*, 31 J. AGRIC. & RESOURCE ECON. 549, 549 (2006).

[56] *See generally* Carl L. German, *Basis: The Economics of Where and When?*, THE FARMER'S GRAIN MARKETING PRIMER UNIT 2, http://www.grainmarketingprimer.com/unit_2/page007.html (last visited Apr. 19, 2016). Under normal market conditions, the basis will approach zero as futures contracts become due. Carl L. German, *Hedging in the Future Markets*, THE FARMER'S GRAIN MARKETING PRIMER UNIT 4, http://www.grainmarketingprimer.com/unit_4/Page019.html (visited Apr. 19, 2016). When the basis is more positive than expected (*i.e.*, the basis curve slopes upward), the basis is said to be "narrowing" or "strengthening," and may be the result of a reduced supply in the local market, lower local transportation costs, or higher local demand and buyers' willingness to pay more. *Id.* When the basis is more negative than expected (i.e., the basis curve slopes downward), it is "widening" or "weakening." German, *Basis: The Economics of Where and When?*, *supra*. This downward movement in the basis indicates a supply surplus in the local market, or higher transportation costs. *Id.* Thus, a narrowing (strengthening) basis gives

The court in In re *Genetically Modified Rice Litigation* discussed the variety of ways in which a grower may sell harvested rice.[57] A contract may depend on the price at which the commodity is trading on the CBOT (futures) market, as well as the calculation of the basis, i.e., the CBOT price minus the local cash price.[58] Under a "basis contract," the grower agrees to a fixed basis before the time of delivery, which may be linked to the CBOT price (e.g., "28 cents below CBOT").[59] Conversely, in a "hedge-to-arrive contract," the basis term is left undetermined until a later date.[60] Alternative pricing techniques, with or without reference to the CBOT price, may also be used.[61]

To reduce risk, some farmers engage in "hedging"—taking equal but opposite positions in the cash and the futures markets.[62] Hedging may occur, for example, when a farmer decides to store 1,000 units of a harvested crop, instead of selling it on the cash market, and then sells 1,000 units of futures of the same crop.[63] The farmer has, by selling futures, eliminated loss that would occur on the cash market in the case of a futures price decline.[64] The final value of the crop will still be subject to changes in the local basis, but the volatility of the basis tends to be far lower than the volatility of futures.[65] When the farmer eventually sells, on the local cash market, the 1,000 units previously stored, the farmer may immediately *buy* 1,000 units in the futures market, thus "offsetting" his or her original "short" position in the futures market described above.[66]

A given grain futures market may prove to be a valid predictor of cash prices for that grain, providing support for damages resulting from the introduction of the genetically-engineered variety. The fact that historic prices in a futures market for a given grain accurately forecast later cash prices is evidence that the futures market is informationally efficient—that is, the futures market immediately and accurately responds to reflect new information about the grain, such as a reported finding of contamination with a genetically-engineered variety. For example, in In re *Genetically*

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sellers in the cash market incentive to sell the commodity, and a widening (weakening) basis gives sellers in the cash market incentive to store the commodity. *Id.*

[57] 251 F.R.D. 392, 394 (E.D. Mo. 2008).

[58] *Id.* at 395.

[59] *Id.*

[60] Diana Klemme, *Hedge to Arrive-Redux*, FEED & GRAIN (June 7, 2006) http://www.grainservice.com/Documents/DKArticles/June2006_HedgeToArriveRedux.pdf.

[61] *In re* Genetically Modified Rice, 251 F.R.D. at 395.

[62] *See* Hofstrand & Wisner, *supra* note 49.

[63] *See id.*

[64] *See id.*

[65] *See id.*

[66] *See id.*

Modified Rice Litigation, plaintiffs alleged that U.S. rice exports and U.S. rice prices plummeted following the announcement by the U.S. Department of Agriculture ("USDA") in August 2006 that trace amounts of Bayer's genetically-engineered rice strain LLRICE 601 had been detected in the U.S. rice supply, and that rice prices fell again upon a second announcement in early 2007 that the commercial rice supply had been contaminated with a second genetically-engineered strain, LLRICE 604.[67] To be clear, these market-based damages are system-wide and are directly–and uniformly–affected by movements in the futures markets for a given crop.[68]

Dr. Carter, who was also the plaintiffs' lead economic expert in In re *Genetically Modified Rice Litigation*, noted that until the USDA announcement, the rough rice futures market had indicated that 2006 would be a high-price year for U.S. long-grain rice producers.[69] The supply of long-grain rice for 2006–07 was expected to reflect a decline from the prior year, and global rice supplies were tightening because the world ending stocks-to-use ratio was expected to be the lowest since 1981–1982.[70] World rice inventories were reportedly near a twenty-six-year low, reducing the buffer against any possible yield declines, and potentially raising prices by 30%.[71] Immediately prior to the initial announcement of contamination in August 2006, CBOT rice futures were rising, owing in part to an anticipated reduction in the size of the U.S. long-grain harvest and a bullish global market.[72] But after the announcement, prices dropped and remained discounted because key rice importers, including the European Union, refused to make commercial purchases of U.S. long-grain rice after the August 2006 contamination announcement.[73] U.S. long-grain rice exports declined by 21%, or 20 million cwt, in the 2006–07 marketing year, and the LLRICE contamination problem accounted for a significant share of this

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[67] 251 F.R.D. at 393–94.

[68] That is not to say that basis and other local variants are completely excluded from pricing effects caused by futures price shifts. It is clear that local factors can affect the ultimate price that a crop producer receives. This is to say, however, that a uniform, nationwide crop price diminution model can be created and defended based on that component of a commodity's price that is uniformly affected by the market movement. This also means that local variants can, and should, be factored in above or below the uniformly affected price, but, for class certification or other market-based damages theories, the price drop caused by negative effects on the commodities markets resulting from GMO (or other) crop contamination, is demonstrably uniform and it is economically viable to treat it as such.

[69] Colin A. Carter Decl., *supra* note 31, ¶ 9.

[70] *Id.*

[71] *See id.*

[72] *Id.*

[73] *Id.* ¶ 11.

drop in U.S. long-grain exports.[74] The contamination problem continued for the duration of the following marketing year, extending the decline in export sales.[75] U.S. long-grain rice producers were harmed in receiving lower prices than they would have received but for the occurrence and revelation of the LLRICE contamination, and they were deprived of any control over the prices they did receive upon sale at their local delivery point.[76] As discussed below, other torts, such as negligence and nuisance, are inadequate to address that harm.

IV. FAILURE OF OTHER TORTS TO ADEQUATELY ADDRESS MARKET LOSS FROM DETRIMENTAL TOUCHING

A. Negligence

A person acts negligently if the person does not exercise reasonable care under all the circumstances.[77] Primary factors to consider in ascertaining whether the person's conduct lacks reasonable care are the foreseeable likelihood that the person's conduct will result in harm, the foreseeable severity of any harm that may ensue, and the burden of precautions to eliminate or reduce the risk of harm.[78]

To prevail on a negligence claim, five elements must be met: (1) defendant owed plaintiff a legal duty; (2) defendant, by behaving negligently, breached that duty; (3) plaintiff suffered actual damage; (4) defendant's negligence was an actual cause of this damage; and (5) defendant's negligence was a proximate cause of this damage.[79]

Under the *Restatement*, the duty of the actor is to "exercise reasonable care" to avoid causing harm.[80] Therefore, when an actor acts unreasonably and causes harm, that actor has breached his/her duty of reasonable care. Damage, in negligence actions, is physical harm relating to the body or property.[81] "Property damage is impairment of tangible personal property or real property."[82]

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[74] *Id.* ¶ 60.

[75] Report of Bruce A. Babcock, *In re* Genetically Modified Rice Litig., No. 06MD01811, 2009 WL 5378887, ¶ 56 (E.D. Mo. Apr. 3, 2009).

[76] *Id.*

[77] RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 3 (2010).

[78] *Id.*

[79] *Id.* § 6 cmt. b.

[80] *Id.* § 7(a).

[81] *Id.* § 4.

[82] *Id.* cmt. a.

However, in asserting negligence claims arising from commodity crop contamination, plaintiffs may be barred from recovery for market losses due to the economic loss doctrine.[83] Under this rule, damages are unavailable absent any physical harm to either plaintiff or property.[84] "The question of recovery for economic losses [under negligence and nuisance theories] continues to create a mish-mash of case law."[85] Although plaintiffs may be able to claim an economic loss if they can establish harm to their person or property as a result of the unapproved crops, here the harm applies to the overall market and not only to individual plaintiffs. Therefore, the negative market effects due to the unapproved GE trait reach the entire market and not just a portion thereof.[86] Recovery under the economic loss doctrine for alleged impacts to export-oriented growers was denied in *Sample v. Monsanto* where summary judgment was granted for the failure to provide evidence of plaintiff farmers suffering a physical injury to crops via pollen drift or post-harvest commingling.[87] Plaintiffs' claims against Monsanto were based on the theory that they lost revenue because the European Union ("EU") rejected GE seed and boycotted all American corn and soy as a result.[88] Similarly, the court in *StarLink* concluded that plaintiffs could not recover for drops in market prices absent a physical injury to the plant or land as a result of the contamination or commingling of the non-GE crop with GE crops prior to sale.[89] Canadian courts reached a similar outcome in a case filed by organic canola growers against Monsanto and Bayer.[90] Some jurisdictions, including Texas, Missouri, Mississippi, and Arkansas, however, have limited or rejected the economic loss doctrine as applied to contamination caused by GE crops.[91]

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[83] RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 21 cmt. e (1998).

[84] *Id.*

[85] Thomas P. Redick, *Biopharming, Biosafety, and Billion Dollar Debacles: Preventing Liability for Biotech Crops*, 8 DRAKE J. AGRIC. L. 115, 138 (2003).

[86] *See In re* Syngenta AG MIR 162 Corn Litigation, 131 F.Supp.3d at 1193-94 (stating that under plaintiffs' market theory, sellers suffered the same injury whether or not their corn was contaminated, therefore, the contamination of *some* of plaintiffs' corn cannot be said to have caused the economic damages alleged).

[87] Sample v. Monsanto Co., 283 F. Supp. 2d 1088, 1093-94 (E.D. Mo. 2003); *see* Thomas P. Redick & A. Bryan Endres, *Litigating the Economic Impacts of Biotech Crops*, 22 NAT. RESOURCES & ENV'T 24, 27 (2008).

[88] *Sample*, 283 F. Supp. 2d at 1093.

[89] *StarLink*, 212 F. Supp. 2d at 841–42.

[90] Hoffman & Beaudoin v. Monsanto Can. (2005), 264 Sask. R. 1 (Can. Sask. Q.B.), *aff'd*, 293 Sask. R. 89 (Can. Sask. C.A. 2007).

[91] *See In re* Genetically Modified Rice Litig., No. 4:07CV825 CDP, 2007 WL 3027580, at *3–4 (E.D. Mo. Oct. 15, 2007) (no valid economic loss claim in Arkansas); *In re* Genetically Modified Rice Litig., 666 F. Supp. 2d 1004, 1015–17 (E.D. Mo. 2009) (economic loss claim interpreted narrowly in Missouri); *In re* Genetically Modified Rice

Because the law regarding economic loss widely varies among states, the doctrine may present a significant obstacle to plaintiffs asserting a market loss theory.

B. Nuisance

"A private nuisance is a non-trespassory invasion of another's interest in the private use and enjoyment of land."[92]

One is subject to liability for a private nuisance if, but only if, his conduct is a legal cause of an invasion of another's interest in the private use and enjoyment of land, and the invasion is either (a) intentional and unreasonable, or (b) unintentional and otherwise actionable under the rules controlling liability for negligent or reckless conduct, or for abnormally dangerous conditions or activities.[93]

In the agricultural context, a private nuisance theory does not address negative market effects on growers. As stated above, a private nuisance claim concerns the interference with one's enjoyment of his land.[94] In contrast, the harm resulting from the intentional release of unapproved GE seeds is crop devaluation.[95] As discussed above, in some jurisdictions the economic loss doctrine also bars nuisance claims.[96] For these reasons, nuisance may also fail to redress the significant harm resulting from negative market effects caused by commodity crop contamination.

V. TRESPASS TO CHATTELS

A. Historical Overview of the Tort

A brief review of the origins and evolution of the trespass to chattels tort guides an understanding of the basis for the proposed modifications to accommodate and recognize agricultural-related scenarios as explored later in this Article. Historically, trespass law[97] developed to protect tangible

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Litig., No. 4:06MD1811 CDP, 2009 WL 4801399, at *3 (E.D. Mo. Dec. 9, 2009) (economic loss theory has not yet been adopted by the Mississippi appeals courts); *In re* Genetically Modified Litig., No. 4:08CV375 CDP, 2010 WL 1049837, at *1–2 (E.D. Mo. Mar. 18, 2010) (economic loss claim valid in Texas but not Arkansas).

[92] RESTATEMENT (SECOND) OF TORTS § 821D (1965).

[93] *Id.* § 822.

[94] *See* RESTATEMENT (SECOND) OF TORTS § 821D (1965).

[95] *See In re* Syngenta AG MIR 162 Corn Litigation, 131 F.Supp.3d at 1216(dismissing a nuisance claim because plaintiffs did not provide "any authority indicating that a landowner may maintain a nuisance claim without any tangible effect on its property").

[96] *See Sample*, 283 F. Supp. 2d at 1093.

[97] *Black's Law Dictionary* defines trespass as "[a]n unlawful act committed against the

property interests resulting from the direct application of physical force.[98] Interference with chattels, proved by injury resulting from direct contact with personal property that is visible, moveable, and tangible, was treated differently from trespass to land, which imposes strict liability for direct, tangible interference with possession and requires no damage to maintain an action.[99] Differences in degree and type of interference with a chattel led to the adoption of common law writs[100]—trover,[101] detinue,[102] and replevin.[103]

The trespass to chattels tort, known as *trespass de bonis aspotaris*, was originally developed to protect tangible, physical personal property (chattels[104]) from unauthorized use or intermeddling.[105] Traditional definitions of the tort reflect these elements; for instance, Massachusetts law defined the tort as follows in the mid-nineteenth century: "a disturbance of the plaintiff's possession . . . by an *actual* taking, a *physical* seizing or taking hold of the goods, removing them from their owner, or by exercising a control or authority over them inconsistent with their owner's possession."[106] Thus, trespass to chattels typically required an intentional *direct* physical contact with a chattel, resulting in *direct* injury, elements still cited by some modern sources.[107] As Professor Epstein has noted,

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person or property of another; esp., wrongful entry on another's real property." *Trespass*, BLACK'S LAW DICTIONARY 1733 (10th ed. 2014).

[98] DAN B. DOBBS, THE LAW OF TORTS § 49 (2000).

[99] *See id.* §§ 51, 52, 53.

[100] *Id.* § 50.

[101] The action of "trover" originally allowed for the recovery of damages against a person who had *found* another's goods and wrongfully converted them to his own use. The action later became the remedy for any wrongful interference with or detention of the goods of another. *See Trover*, BLACK'S LAW DICTIONARY 1739 (10th ed. 2014).

[102] "Detinue" is a "common-law action to recover personal property wrongfully taken or withheld by another." *Detinue*, BLACK'S LAW DICTIONARY 545 (10th ed. 2014).

[103] "Replevin" is an "action for the repossession of personal property wrongfully taken or detained by the defendant, whereby the plaintiff gives security for and holds the property until the court decides who owns it." *Replevin*, BLACK'S LAW DICTIONARY 1491 (10th ed. 2014).

[104] Chattels were distinguished from both real property and from intellectual property. PAGE KEETON & WILLIAM L. PROSSER, PROSSER & KEETON ON LAW OF TORTS, § 14 (Trespass to Chattels), at 85 (W. Keeton, D. Dobbs, R. Keeton, & D. Owen eds., 5th ed. 1984) [hereinafter PROSSER & KEETON].

[105] *Id.*

[106] Holmes v. Doane, 69 Mass. 328, 329 (1855) (emphasis added).

[107] *See Trespass*, BLACK'S LAW DICTIONARY 1735 (10th ed. 2014) (defining *Trespass to chattels* as "[t]he act of committing, without lawful justification, any act of direct physical interference with a chattel possessed by another. The act must amount to a direct forcible injury"); RESTATEMENT (SECOND) OF TORTS §§ 217, 218 (1965).

"[w]hat is striking about the law of trespass to chattels is how little doctrinal change it has undergone in hundreds of years."[108]

Although trespass to chattels is sometimes described as an "ancient" tort, its origins are not much more ancient than most other common law torts. However, owing to the expansion of the law of conversion, which requires complete dispossession or destruction of a chattel, trespass to chattels is rarely encountered today. Nonetheless, trespass to chattels remains a useful tort because it recognizes a more subtle, or lesser, form of injury than conversion recognizes.[109] Damages recoverable on a trespass to chattels theory are accordingly more limited: "[T]he measure of damages in an action for trespass to chattel is the diminished value of the chattel which results from the damage actually sustained from the time of the taking until the return of the goods," whereas "damages in an action for conversion are measured by 'the market value of the chattel at the time and place of conversion plus interest to the date of judgment.'"[110] Where damages to personal property fall short of the "forced sale" damages found in conversion, trespass to chattels provides a cause of action.[111] Indeed, trespass to chattels is known as "the little brother of conversion."[112]

The following sections summarize each element of the trespass to chattels tort, which generally include intentional physical contact resulting in actual, substantial harm to chattels.[113]

1. Intent

As an intentional tort, trespass to chattels requires an *intentional* interference with a chattel; negligent or accidental touching will not suffice.[114] As the Missouri Supreme Court has explained:

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[108] Richard A. Epstein, *Cybertrespass*, 70 U. CHI. L. REV. 73, 76 (2003).

[109] Greg Lastowka, *Decoding Cyberproperty*, 40 IND. L. REV. 23, 26 (2007) (citing Russ VerSteeg, *Law in Ancient Egyptian Fiction*, 24 GA. J. INT'L & COMP. L. 37, 61 n.100 (1994) (comparing trespass to chattels with conversion)).

[110] *See, e.g.*, Staub v. Staub, 376 A.2d 1129, 1133 (Md. App. 1977).

[111] *See id.* at 1132. To illustrate the difference between conversion and trespass to chattels: if a car was stolen or destroyed, a tortfeasor would be forced to pay the owner the full value of the car—this is conversion. In contrast, if the car was merely scratched, compensation only for cosmetic repairs would be warranted. Here, trespass to chattels provides an appropriate remedy. For further discussion of trespass to chattels and conversion see Thrifty-Tel, Inc. v. Bezenek, 54 Cal. Rptr. 2d 468, 473 (Cal. Ct. App. 1996).

[112] PROSSER & KEETON, *supra* note 104, § 14, at 86.

[113] *Id.* § 14, at 85.

[114] *See* Mountain States Tel. & Tel. Co. v. Horn Tower Const. Co., 363 P.2d 175 (Colo. 1961) (deciding a trespass case in which a contractor accidentally strikes a buried phone cable while excavating land).

> A trespass to a chattel may be committed by intentionally . . . intermeddling with a chattel in the possession of another, and the intention required is present when an act is done for the purpose of using or otherwise intermeddling with a chattel or with knowledge that such an intermeddling will, to a substantial certainty, result from the act.[115]

In other words, trespass law requires an intention to interfere with the chattel, but *not* an intention to cause harm (although, as explained below, harm or damage must be shown).[116] Substantial certainty that intermeddling will result from what one does or fails to do is sufficient to establish intent.

2. *Physical contact*

The *Restatement* recognizes a trespass to chattels claim on the basis of intentionally "(a) dispossessing another of the chattel, or (b) using or intermeddling with a chattel in the possession of another."[117] In the latter category, "intermeddling" is defined as "intentionally bringing about a *physical* contact with the chattel."[118] Under early common law, an action for trespass could be brought only when interference with chattel was direct and physical.[119] For example, locking a door to the room where a plaintiff's goods were located would not expose a defendant to liability for trespass.[120] Today, however, *direct* interference is no longer required, and the requirement for physical contact has been mitigated by many courts to account for technological advances and practical realities.[121]

As the *Restatement* illustrates, the actor need not make "direct" contact with the chattel; striking a dog or throwing a rock at a car constitutes a trespass to chattels.[122] In the first example, the actor physically touches another's chattel (the dog); in the second, he intentionally, albeit *indirectly*, causes the rock to touch another's chattel (the car).[123]

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[115] Cover v. Phillips Pipe Line Co., 454 S.W.2d 507, 512 (Mo. 1970)(internal quotation marks omitted) (quoting RESTATEMENT (SECOND) OF TORTS § 217 (1965)).

[116] *See* Ranson v. Kitner, 31 Ill.App. 241 (1889) (where defendants were hunting for wolves and plaintiff's dog resembled a wolf, and they believed it to be one and killed it as such, they were liable for damages caused by their mistake).

[117] RESTATEMENT (SECOND) OF TORTS § 217 (1965).

[118] *Id.* § 217 cmt. e (emphasis added).

[119] DOBBS, *supra* note 98, § 60.

[120] *Id.*

[121] *See id.* § 217 cmt. d ("[T]he rule stated in this Section is applicable irrespective of whether the intermeddling was the direct or indirect result of an act done by the actor, provided that his misconduct was the legal cause of the harm").

[122] RESTATEMENT (SECOND) OF TORTS § 217 cmt. e (1965).

[123] *Id.*

Likewise, the requirement for physical contact with the chattel has been relaxed in order to recognize the tort where a defendant has caused "touching" as through the intrusion of intangible items—dust particles, smoke, electronic signals, or sound waves—upon the chattel.[124]

3. Substantial harm

Unlike trespass to land,[125] liability for trespass to chattels requires legally cognizable or substantial harm as the result of the trespass.[126] Again, harm can result from either dispossession or intermeddling, but harmless intermeddling is not actionable. The *Restatement* cites as an example of "harmless" intermeddling a child pulling a dog's ears: provided no harm to the dog results, there is no trespass to chattels.[127]

In contrast, intermeddling may be substantially harmful if: (1) "the chattel is impaired as to its condition, quality, or value"; (2) "the possessor is deprived of the use of the chattel for a substantial time"; or (3) "the possessor or some person or thing in which the possessor has a legally protected interest is harmed."[128] Further, the *Restatement* recognizes that a chattel may be damaged not only in its physical condition, but also in its "quality" or "value" to the reasonable possessor.[129] For instance, use of a personal item—a toothbrush, or an intimate item of clothing—by one other than the owner may "lead a person of ordinary sensibilities" to conclude that he or she, as the possessor, can no longer use the item, or may otherwise destroy the item's value in the eyes of the possessor.[130] Such use

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[124] *See Thrifty-Tel*, 54 Cal. Rptr. 2d 468, 473 n.6.

[125] As Professor Lastowka explained: "[T]he most popular explanation for the difference seen between the law of trespass to land and chattels is that the state has a less significant interest in protecting things from being touched. The state presumably would not want to hear cases about those who happen to, in public places, defiantly touch cars, umbrellas or dogs. The social cost of addressing such dignitary harms outweighs the social benefits that state intervention might provide." Lastowka, *supra* note 109, at 28. The *Restatement* explains that the rationale for requiring harm for trespass to a chattel but not for trespass to land is the availability and effectiveness of self-help in the case of trespass to a chattel. *See* Intel Corp. v. Hamidi, 71 P.3d 296, 327 (Cal. 4th 2003). "Sufficient legal protection of the possessor's interest in the mere inviolability of his chattel is afforded by his privilege to use reasonable force to protect his possession against even harmless interference." RESTATEMENT (SECOND) OF TORTS § 218, cmt. E (1965).

[126] DOBBS, *supra* note 98, § 60.

[127] *Id.*; *see* Glidden v. Szybiak, 63 A.2d 233, 235 (N.H. 1949).

[128] RESTATEMENT (SECOND) OF TORTS § 218 (1965).

[129] *Id.* § 218 cmt. h.

[130] *Id.*

or intermeddling would constitute trespass to such chattels although their physical condition is not impaired.[131]

B. Expansion of Trespass to Chattels to Cyberspace

While the tort of trespass to chattels was little used for many decades, it has found a revival in the cyberspace context. The tort was initially applied in this context to combat the unauthorized use of another's computer equipment or systems to disseminate commercial bulk email, or "spam." Courts further expanded the tort of trespass to chattels to reach activities such as use of another's equipment or server to disseminate noncommercial email and "spiders,"[132] or to run automatic programs that search the internet. Such cases stand as an expansion of the tort of trespass to chattels, given that they arguably do not involve physical touch or direct interference with a chattel.[133]

Expansion of the tort of trespass to chattels for purposes of the cyberspace context arguably began in 1996, when the California Court of Appeals, in *Thrifty-Tel, Inc. v. Bezenek*, allowed a trespass to chattels claim to proceed.[134] Although *Thrifty-Tel* was not cyber-tort case, it addressed the analogous context of the unauthorized use of another's telephone system, thus laying the groundwork for application of the doctrine to the internet. Thrifty-Tel, a long-distance phone company, sued the defendants after their teenage sons hacked into the company's long-distance computer access codes to make more than 1300 free telephone calls over several hours.[135] Because Thrifty-Tel was a small company with few telephone lines, the automated calling overburdened its telephone system for that period and denied some paying subscribers telephone line access.[136] Although Thrifty-Tel had sued for damages on a theory of conversion, on appeal, the court

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[131] *Id.*

[132] *See infra* note 151.

[133] *See, e.g.*, eBay, Inc. v. Bidder's Edge, Inc., 100 F. Supp. 2d 1058 (N.D. Cal. 2000) (enjoining Bidder's Edge from using web crawlers to search eBay's site to report pricing information); Register.com, Inc. v. Verio, Inc., 126 F. Supp. 2d 238 (S.D.N.Y. 2000) (Register.com, an internet service provider, obtained an injunction preventing Verio from spidering its database for customer names and contact information and sending them advertisements); CompuServe, Inc. v. Cyber Promotions, Inc., 962 F. Supp. 1015 (S.D. Ohio 1997) (granting preliminary injunction on grounds that unsolicited email constituted a trespass to chattels); America Online, Inc. v. IMS, 24 F. Supp. 2d 548 (E.D. Va. 1998) (granting summary judgment to America Online on the trespass-to-chattels claim against IMS, a marketing company, for sending unauthorized mass email advertisements).

[134] 54 Cal. Rptr. 2d 468 (Cal. Ct. App. 1996).

[135] *Id.* at 471.

[136] *Id.*

instead found liability based on a theory of trespass to chattels, concluding that this afforded the more appropriate remedy.[137] The intrusion on chattel was neither tangible nor direct: the teenagers' actions had not caused physical contact with a chattel, but, rather, had caused electrons to be sent to the telephone lines. Nevertheless, the appellate court held the physical contact element was satisfied, stating, in a footnote, that the modern rule of trespass "recognizes an indirect touching" of others' chattels by "migrating intangibles," such as dust particles, microscopic particles, or smoke.[138] Indeed, the court stated that "the requirement of a tangible has been relaxed almost to the point of being discarded."[139] The court thus concluded that "[e]lectronic signals generated by [defendants'] activities were sufficiently tangible to support a trespass cause of action."[140]

Since that time, several courts have followed the *Thrifty-Tel* reasoning to uphold claims of trespass to chattels alleged to be made via indirect and/or intangible means in the cyberspace context, including cases in which defendants' actions triggered electrons that, in turn, triggered dissemination of mass emails and the unauthorized use of internet web browsers.[141] For example, in *CompuServe Inc. v. Cyber Promotions, Inc.*, CompuServe brought a trespass to chattels claim against Cyber Promotions after it sent unsolicited "spam" email advertisements to CompuServe's customers.[142] Interpreting the tort under Ohio law, the court followed *Thrifty-Tel* to conclude that electronic signals are "sufficiently physically tangible" to give rise to an action in trespass.[143] The court recognized that physical damage to a chattel is not necessary.[144] Because CompuServe's equipment was valuable only insofar as it could serve the company's customers, the transmission of junk email diminished the value of that equipment by draining network resources.[145] The diminished value of that equipment to CompuServe did not depend on a showing of physical damage.[146]

Further, applying *Restatement* Section 218(d), which recognizes that recovery may be had for a trespass that causes harm to something in which the possessor has a legally protected interest,[147] the court in *CompuServe*

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[137] *Id.* at 473.

[138] *Id.* at 473 n.6.

[139] *Id.* (citations omitted); *see also* Wilson v. Interlake Steel Co., 649 P.2d 922, 924 (Cal. 1982) (migration of dust particles).

[140] *Thrifty-Tel*, 54 Cal. Rptr. 2d at 473 n.6.

[141] *See, e.g., CompuServe, Inc.*, 962 F. Supp. 1015.

[142] *Id.*

[143] *Id.* at 1021.

[144] *Id.* at 1022.

[145] *Id.*

[146] *Id.*

[147] *CompuServe, Inc.*, 962 F. Supp. at 1022–23.

also ruled that the inundation of junk email harmed CompuServe's business reputation and goodwill and directly caused the loss of customers.[148] The court concluded that the defendant's acts in that case constituted intrusions into legally protected interests, and were thus actionable.[149]

Similarly, the court in *eBay, Inc. v. Bidder's Edge, Inc.*,[150] found a trespass to chattels when the defendant's unauthorized use of "robotic spiders"[151] caused a high volume of web traffic and thus diminished the quality or value of eBay's computer system.[152] Although eBay had not alleged any "particular service disruption"[153] or "specific incremental damages"[154] to its computer system, the court found that intermeddling with eBay's private property was sufficient to establish a cause of action, stating, in pertinent part, that: "[a] trespasser is liable when the trespass diminishes the condition, quality or value of personal property." The court concluded that even though the defendant's intrusions "use[d] only a small amount of eBay's computer . . . capacity, [defendant] nonetheless deprived eBay of the ability to use that portion of its personal property for its own purposes. The law recognizes no such right to use another's personal property."[155]

For a time, other courts interpreted *Thrifty-Tel* and *Bidder's Edge* to mean that trespass to chattels claims under California law no longer required any showing of direct damage to the chattel.[156] However, this

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[148] *Id.* at 1023.

[149] *Id.*

[150] 100 F. Supp. 2d 1058.

[151] A robotic spider, also referred to as a software robot, is "a computer program which operates across the Internet to perform searching, copying and retrieving functions on the Websites of others." *Id.* at 1060; Stephen Perdana, *What are Search Engine Spiders/Crawlers/Robots?*, KREACIO MEDIA (June 5, 2014, 9:00 AM), http://kreaciomedia.com/search-engine-spiders-crawlers-robots/. This program recursively queries other computers over the Internet to obtain significant amounts of information. 100 F. Supp. 2d at 1060 n.2. For example, Bidder's Edge used a robotic spider to aggregate Internet auctions from various websites including that of eBay. *Id.* at 1061. This robotic spider would make requests to eBay up to 100,000 times per day for all of its auctions, to give Bidder's Edge users the capability to search multiple auctions on multiple auction web sites for the best price on a particular item. *Id.* at 1063.

[152] *Bidder's Edge*, 100 F. Supp. 2d at 1061–63.

[153] *Id.* at 1065.

[154] *Id.* at 1063.

[155] *Id.* at 1071.

[156] *See, e.g., id.* at 1070 (finding sufficient evidence of trespass where a defendant accessed plaintiff's website in violation of instructions not to do so). For a scholarly critique of *Thrifty-Tel*'s expansion of trespass to chattels, *see, e.g.*, Dan L. Burk, *The Trouble with Trespass*, 4 J. SMALL & EMERGING BUS. L. 27, 33 (2000) (arguing that *Thrifty-Tel* "essentially reversed several hundred years of legal evolution, collapsing the separate doctrines of trespass to land and trespass to chattels back into their single common law progenitor, the action for trespass"). For a detailed discussion of the application of trespass

interpretation was short-lived. In *Intel Corp. v. Hamidi*, the California Supreme Court reversed the appellate court's ruling that damage was no longer a requirement and that mere electronic contact with computing equipment was sufficient "use" to support a claim for injunctive relief.[157] Reaffirming the traditional rule, established prior to *Thrifty-Tel*, the California Supreme Court held that the trespass to chattels tort requires some damage or impairment to the chattels or their functioning.[158] In *Hamidi*, the plaintiff's employee had used the company's email system to send his coworkers a limited number of emails criticizing the company.[159] The court ruled that trespass to chattels under California law could not be based on "an electronic communication that neither damages the recipient computer system nor impairs its functioning," and where the emails "cause[d] injury only because of their contents," resulting in a loss of employee time.[160]

In *Hamidi*, the Supreme Court of California distinguished the line of cases including *CompuServe* and *Bidder's Edge* as having "generally involved some actual or threatened interference with the computers' functioning."[161] In cases involving bulk commercial email, the defendants' actions "both overburdened the ISP's own computers and made the entire computer system harder to use for recipients."[162] This overburdening constituted the requisite "damage" to the chattel by impairing its functioning.[163] The court in *Hamidi* determined that trespass to chattels required "evidence of an injury to the plaintiff's personal property or legal interest therein," and that the alleged loss of employee time resulting from the dissemination was "an injury entirely separate from, and not directly affecting, the possession or value of personal property."[164] Thus, notwithstanding the *Restatement* rule that intermeddling with chattel may be harmful where "harm is caused to some person or thing in which the

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to chattel doctrine to cyber property (which is beyond the scope of this Article), see Lastowka, *supra* note 109, at 26.

[157] *Intel Corp. v. Hamidi*, 71 P.3d at 312.

[158] *Id.* at 304.

[159] *Id.* at 299.

[160] *Id.* at 300, 305.

[161] *Id.* at 304.

[162] *Id.* at 300; *see, e.g.*, Hotmail Corp. v. Van$ Money Pie, Inc., 47 U.S.P.Q.2d 1020, 1998 WL 38838 (N.D. Cal., Apr. 16, 1998) (opined that plaintiff is likely to prevail on trespass to chattels claim upon showing that defendant's unsolicited emails filled up plaintiff's computer storage space); *CompuServe, Inc.*, 962 F. Supp. 1015 (holding that sending unsolicited commercial bulk email states claim for trespass to chattels where it was shown that processing power and disk space were adversely affected).

[163] *Intel Corp. v. Hamidi*, 71 P.3d at 300.

[164] *Id.* at 300-01.

person has a legally protected interest,"[165] *Hamidi* suggests that, under California law, harms to persons, things, or interests other than the chattel that is the subject of the trespass (i.e., the computer system or network used by the defendant) are not actionable absent a nexus between the injury complained of and the possession or value of that chattel.[166] *Hamidi* suggests that trespass to chattels under California law generally retains its traditional character in the cyberspace arena by continuing to require damage to the chattel itself.[167]

C. Current Status of the Tort: How Cyberspace Cases Altered the Common Law

As discussed above, trespass to chattels has been reoriented from a tort of intentional direct interference with a chattel to a tort of intentional interference with a chattel.[168] The element of physical touching or intermeddling with the chattel has been mitigated over time as courts have come to recognize as an actionable tort the technologically executed interference or intermeddling on a chattel, such as through transmission of intangible electronic signals via another's computer systems—or, as we suggest herein, through systemic damage to the commodity crop system, including farmstand pricing, by virtue of price effect caused by GE contamination.[169] In cyber-trespass cases, the intrusion onto a server or system is via transmission of intangible electronic signals, not by direct physical touching of the chattel, and the chattel (server, computer equipment) suffers no damage in the traditional sense of the tort. Nevertheless, the application of trespass to chattels to cyberspace cases has broadened the common law rule by allowing recovery for an intangible intrusion that causes damage other than physical harm to the chattel.

Such flexible interpretations of the elements of the tort of trespass to chattels to accommodate the modern realities of property and trespass are entirely appropriate. As one author explained, "[i]n its pristine common law form, the trespass to chattels tort would be useless as a rule" in

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[165] RESTATEMENT (SECOND) OF TORTS § 218 (1965).

[166] *Intel Corp. v. Hamidi*, 71 P.3d at 300.

[167] Laskowta, *supra* note 109, at 38; *see also* Ronnie Cohen & Janine S. Hiller, *Towards a Theory of Cyberplace: A Proposal for a New Legal Framework*, 10 RICH. J.L. & TECH. 2, 23 (2003) (stating that the *Hamidi* decision "returns the tort of trespass to chattels to its common law roots"); Epstein, *supra* note 108, at 76-77 (noting that "the standard American legal view, as set forth in the *Restatement*, is that 'deliberate trespasses to chattels that [result] in neither damage to, nor removal of, the chattel' are not actionable.").

[168] *See supra* Part V.B.

[169] *See supra* Part V.B.

cyberspace, because physical "damage" to a website's physical equipment will never be found.[170] Rather than physical harm to the server itself, courts have recognized that use of the server over time, resulting in diminution of network capacity or functionality, may result in or constitute the damage element.[171] Were courts unwilling to expand trespass to chattels to include interference with network capacity or functionality, significant present-day harms, such as computer viruses or attempts to disable websites, would fall outside of the tort's reach.[172]

Thus, applied to "a dynamic modern realm such as the Internet," a common law rule may be appropriately subject to "some doctrinal stretching."[173] Put another way, a common law system should be able to respond to modern realities "both by preserving what makes sense in the older system and by changing what does not."[174] As Justice Cardozo suggested, "[t]he creative element in the judicial process finds its opportunity and power" in the development of the law.[175]

VI. PROPOSAL FOR AN EXPANDED AND MODERNIZED TRESPASS TO CHATTELS TORT IN AGRICULTURAL "MARKET TOUCHING" CASES

Against this background of the history and recent expansion of the trespass to chattels tort in the cyberspace context, we turn to its application in agricultural cases. Such application would appear to be a natural return to the origins of the trespass to chattels tort, given that early cases frequently involved trespass onto real property. The analysis below explains why the elements of the tort of trespass to chattels should be interpreted to permit growers, whose crops are devalued as a result of market damages caused by the improper intrusion of genetically-engineered crop varieties upon the market, as caused by patent holders and seed companies, to recover those damages through a trespass to chattels claim, regardless of whether genetic testing confirms tangible touching of such crops by cross-pollination or commingling of varieties. The following sections discuss the applicability of trespass to chattels in the agricultural arena.

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[170] Daniel Kearney, *Network Effects and the Emerging Doctrine of Cybertrespass*, 23 YALE L. & POL'Y REV. 313, 341 (2005).

[171] *Id.* at 340.

[172] *Id.*

[173] *Id.*

[174] Epstein, *supra* note 108, at 74.

[175] BENJAMIN CARDOZO, NATURE OF THE JUDICIAL PROCESS 165 (1921).

A. Liability of Seed Patent Holders and Manufacturers

The first hurdle to a successful trespass to chattels claim is to attach liability to the seed patent owner, rather than to farmers or grain elevator operators that produced or commingled the genetically-engineered crop leading to overall crop contamination.[176] From a policy perspective, selecting a proper defendant depends upon factors such as knowledge of the risk, profit or other benefit from the risk, control of the risk, ability to prevent the risk from materializing (such as by bearing the costs for preventative measures), and capability to cover against potential losses in the future.[177] Applying these factors strongly supports channeling liability towards GE seed patent owners who release unapproved crop varieties to farmers for planting.[178] Because seed patent owners control the sale, use, and handling of GE trait seeds via their strictly enforced licensing agreements—through which they could, if they so choose, limit the possibility of contamination through channeling requirements or otherwise—these patent owners *are* the direct cause of contamination and should thus be liable for the resulting crop devaluation. Local GE farmers essentially operate as extensions of seed companies when cross-contamination occurs. Thus, holding the patent owner liable for trespass to chattels directly targets the source of the contamination.

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[176] The U.S. District Court for the District of Kansas dismissed plaintiffs' trespass to chattels claim against Syngenta, finding persuasive cases holding that there is no liability for trespass for an injury or contamination caused by a product after it has left the control of its seller. *In re* Syngenta AG MIR 162 Corn Litigation, 131 F.Supp.3d at 1210; *see* Town of Hooksett Sch. Dist. v. W.R. Grace & Co., 617 F. Supp. 126, 133 (D.N.H. 1984) (dismissing trespass claim because defendant's ownership and control of asbestos products ceased at the time of sale; the plaintiff purchased the product and then brought it onto its premises; thus, it was plaintiff who was responsible for the presence of the asbestos in the school); City of Manchester v. Nat'l Gypsum Co., 637 F. Supp. 646, 656 (D.R.I. 1986) (dismissing trespass claim because the defendants' ownership and control over the asbestos products ceased after the time of manufacture and sale); Dine v. W. Exterminating Co., No. CIV.A. 86-1857-OG, 1988 WL 25511, at *9 (D.D.C. Mar. 9, 1988) (trespass claim dismissed because pesticide manufacturer took no action, intentional or otherwise, that directly caused a physical invasion of plaintiffs' interest in the exclusive possession of their land and had no knowledge of whose land would be treated with the pesticide). However, as explained below, crop contamination cases are distinguishable from those cases in which ownership and control of products ceases at time of sale.

[177] EUROPEAN CENTRE OF TORT & INSURANCE LAW, LIABILITY AND COMPENSATION SCHEMES FOR DAMAGE RESULTING FROM THE PRESENCE OF GENETICALLY MODIFIED ORGANISMS IN NON-GM CROPS 67 (Bernhard A. Koch ed., 2007), http://www.usda.gov/documents/EU_Comp_Schemes_on_GE_from_MM.pdf [hereinafter EUROPEAN CENTRE].

[178] *Id.* at 68.

GE seed patent holders should be held liable for the damage that occurs after the point of sale because they retain control over GE crops through grower or technology agreements with farmers.[179] For example, Monsanto's Technology Use Agreement ("TUA") instructs farmers on how to use the seeds properly.[180] The TUA prohibits farmers from saving, reselling, or sharing the GE seeds with other farmers.[181] It also ensures the seed company's right to monitor the use of its patented seed beyond the point of sale by granting permission to review receipts, aerial photographs, and other documents related to the purchase and use of GE seed.[182] These restrictions cover whether, where, and how its seeds are cultivated and reproduced, demonstrating a GE seed patent holder's intent to maintain control of its GE products and their progeny at every step of their lifespan.[183]

Monsanto, DuPont/Pioneer, Syngenta, and Dow AgroSciences are considered the "big four"[184] biotech seed companies which together control 80% of the U.S. corn market, 70% of the U.S. soybean market, and more than half of the world's seed supply.[185] In attaining such an overwhelming market share, these GE seed companies vigorously enforce their patent rights, ensuring their patented technology is maintained within the bounds of licensing agreements.[186] Courts have held that licensees of self-replicating technology, such as GE seeds, are entitled to the use of only the

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[179] Neil Hamilton, *Why Own the Farm if You Can Own the Farmer (and the Crop)?: Contract Production and Intellectual Property Protection of Grain Crops*, 73 NEB. L. REV. 48, 89–91 (1994). A trespass to chattels claim, however, is not limited to those farmers who have entered into TUAs. Control over GE seeds via TUAs demonstrates why trespass to chattels should be available to all growers whose crops are devalued due to overall contamination by seeds containing patent holders' GE traits.

[180] MONSANTO, 2015 TUG: TECHNOLOGY USE GUIDE AND IRM OVERVIEW 32 (2015), http://www.monsanto.com/sitecollectiondocuments/technology-use-guide.pdf.

[181] *Id.* at 32 n.4(g).

[182] *See generally id.* at 32 n.4.

[183] Katie Black & James Wishart, *Containing the GMO Genie: Cattle Trespass and the Rights and Responsibilities of Biotechnology Owners*, 46 OSGOODE HALL L.J. 397, 420–21 (2008).

[184] This list of big biotech companies could soon be reduced to three. In December 2015, DuPont and Dow announced a possible merger. Jacob Bunge, et al., *DuPont, Dow Chemical Agree to Merge, Then Break Up into Three Companies*, WALL ST. J. (Dec. 11, 2015), http://www.wsj.com/articles/dupont-dow-chemical-agree-to-merge-1449834739.

[185] Sara Schafer, *Behind the Seed Scene*, AGWEB (July 27, 2012), http://www.agweb.com/article/behind_the_seed_scene/.

[186] *See* Monsanto Can. Inc. v. Schmeiser, [2004] 1 S.C.R. 902 ¶¶ 160-61 (Can.), http://scc-csc.lexum.com/scc-csc/scc-csc/en/item/2147/index.do. The Canadian Supreme Court upheld the lower court's finding that Schmeiser was guilty of patent infringement despite evidence that the GE corn growing on his land was inadvertent and not intentionally planted as such. *Id.*

initial embodiment of the technology—the purchased seeds.[187] Saving seeds is prohibited.[188] The Supreme Court has affirmed that Monsanto's patent rights further extend to any replications of the patented technology, including genetic drift self-replication.[189] As a result of the Court's *Bowman v. Monsanto Co.* decision, when GE pollen drift contaminates the crops of a non-licensee, Monsanto can recover for patent infringement—a strict liability offense in patent law—because a plant containing patented genetic material found growing on a non-licensee's land qualifies as making or using the patented gene.[190]

Lawsuits against farmers for patent infringement highlight GE seed companies' legal interest in any genetic material that may drift after a licensed use.[191] Because seed companies assert their patent rights against conventional or organic farmers on whose fields GE traces have been found, regardless of those farmers' fault, it seems logical and fair to use exactly the same line of causation in the reverse direction as well.[192] Otherwise, failing to hold the patent owner liable for the harms caused by GE cross-contamination creates an "imbalance between the rights and responsibilities of biotech patent owners."[193]

Furthermore, holding seed companies liable for market loss resulting from cross-contamination places liability on the party in the best position to assess and control the risk of external harms that result from the creation, release, and licensing of its GE seeds. Thus, extending liability ensures that

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[187] *Id.* at ¶¶ 165-69.

[188] *See* Bowman v. Monsanto Co., 133 S. Ct. 1761, 1764 (2013).

[189] *Id.* (holding that patent exhaustion does not permit a farmer to reproduce patented seeds through planting and harvesting without the patent holder's permission).

[190] *See* 35 U.S.C. § 271(a) (2012) ("[W]hoever without authority makes, uses, offers to sell, or sells any patented invention ... infringes the patent."); *see also* Organic Seed Growers & Trade Ass'n v. Monsanto Co., 718 F.3d 1350, 1356 (Fed. Cir. 2013) ("[W]e will assume (without deciding) that using or selling windblown seeds would infringe any patents covering those seeds, regardless of whether the alleged infringer intended to benefit from the patented technologies.").

[191] CTR. FOR FOOD SAFETY, MONSANTO V. U.S. FARMERS 2012 UPDATE (2012), http://www.centerforfoodsafety.org/files/monsanto-v-us-farmer-2012-update-final_98931.pdf. The Center for Food Safety's report documents Monsanto's "unprecedented use of patents and restrictive licensing agreements to investigate and sue farmers for suspected seed-saving." *Id.* at 1. As of November 2012, Monsanto has filed 142 lawsuits against farmers in at least twenty-seven different states. *Id.* Monsanto has collected judgments against farmers totaling $23 million and additional out-of-court settlements estimated between $85 and $160 million. *Id.* at 1–2.

[192] *See* EUROPEAN CENTRE, *supra* note 177, at 69.

[193] Jeremey de Beer, *The Rights and Responsibilities of Biotech Patent Owners*, 10 U.B.C. L. REV. 343, 372 (2007), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1001103.

seed companies internalize those externalities and will afford an efficient recourse for recovery to farmers who face losses in market value.[194]

B. Crops as "Chattels"

As an initial matter, crops have historically constituted "chattels" for purposes of the trespass to chattels claim. Traditionally, in addressing trespass to land and chattel claims, courts distinguished crops still attached to the land (considered part of the soil or real estate) from crops "severed" by plaintiff or defendant at the time of dispossession; crops, upon their severing from the soil by either plaintiff or defendant, became plaintiff's chattels.[195] In recent years, at least one court has, without referencing this traditional distinction, suggested that crops affected by genetically-engineered crop varieties may be "chattels" for purposes of a trespass to chattels claim.[196] Moreover, the view that crops are chattels, without regard to whether they are separated from the land, is consistent with modern economic realities of farming. Crop insurance companies treat crops and land separately. Crops may be valued and sold well before they are harvested ("severed") and sold separately from the land on which they grow.

C. Intent

Trespass to chattels is an intentional tort, requiring intent to commit the trespass or intrusion on the chattel. Intent, as the term is used throughout the *Restatement of Torts*, references the "consequences of an act, rather than the act itself."[197] Intent is not, however, limited to consequences that

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[194] Sabrina Wilson, *Induced Nuisance: Holding Patent Owners Liable for GMO Cross-Contamination*, 64 EMORY L.J. 169, 194 (2014); *see* Paul J. Heald & James Charles Smith, *The Problem of Social Cost in a Genetically Modified Age*, 58 HASTINGS L.J. 87, 97 (2006) ("In the case of a crop like corn, which casts its pollen for miles, it may be impossible for an organic farmer to identify and bring to the table all the possible GE farming firms that might be the cause of contamination."). However, if liability for market loss is channeled onto the seed producers, the GE farmers are not entirely off the hook because the seed producers' will inevitably pass these costs onto their customers. EUROPEAN CENTRE, *supra* note 177, at 69.

[195] *See, e.g.*, White v. Yawkey, 108 Ala. 270, 274-75 (1896) (severing of pine logs converted them to chattels, whose value provided the basis of damages in trover); Phillips v. Bowers, 73 Mass. 21, 26 (1856) (once severed, trees, rocks, and minerals become personal property of landowner); Brittain v. McKay, 23 N.C. 265, 270 (1840) (severed crops are chattels); Williams v. State, 186 Tenn. 252, 255 (1948) (distinguishing unsevered from severed corn, deeming the latter "chattel").

[196] *StarLink*, 212 F. Supp. 2d at 844.

[197] RESTATEMENT (SECOND) OF TORTS § 8A cmt. a (1965).

are desired.[198] To prove intent, a plaintiff is not required to establish a subjective state of mind that a defendant desires the consequences of its act.[199] Showing substantial certainty that the consequences will follow the act satisfies the test.[200] The practical application of this principle has meant that where a reasonable person in the defendant's position would believe that a particular result was substantially certain to follow, the law will treat him as though he had intended it.[201] To demonstrate intent to trespass to chattels, intent is satisfied when an actor has knowledge that intermeddling will, to a substantial certainty, result from the act.[202] Thus, the intent to do the act that leads to the trespass is required, not the intent to actually trespass.[203]

Intent can be established even when intervening causes contribute to the resulting harm. Trespass cases are instructive. For example, in *Bradley v. American Smelting and Refining Co.*, plaintiffs sued for damages in trespass and nuisance from the deposit on their property of microscopic airborne particles of heavy metals that came from a copper smelting and refining company.[204] The Washington Supreme Court held that the defendant smelting company had the requisite intent to commit intentional trespass as a matter of law.[205] The court explained that intent extends not only to those consequences which are desired, but also to those which the actor believes are substantially certain to follow from what he does.[206] Thus, "intent to trespass may also include an act that the actor undertakes realizing that there is a high probability of injury to others and yet the actor behaves with disregard of those likely consequences."[207] Intent was established in *Bradley* because the smelting company knew for decades that sulfur dioxide and particulates of metals were being emitted from its smokestack.[208] The court also found that the company had to know that the solids propelled into the air by the warm gases would settle back to earth somewhere.[209] Furthermore, it had to know that a purpose of the smokestack was to disperse the gas, smoke and minute solids over as large an area as possible

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[198] *See* Vittum v. N.H. Ins. Co., 369 A.2d 184, 186 (N.H. 1977).

[199] RESTATEMENT (SECOND) OF TORTS § 8A cmt. b (1965).

[200] *Id.*

[201] Bradley v. Am. Smelting & Ref. Co., 709 P.2d 782, 785 (Wash. 1985) (citing RESTATEMENT (SECOND) OF TORTS § 8A cmt. b (1965)).

[202] RESTATEMENT (SECOND) OF TORTS § 217 cmt. c (1965).

[203] W.T. Ratliff Co. v. Henley, 405 So. 2d 141, 146 (Ala. 1981).

[204] *Bradley*, 709 P.2d at 784.

[205] *Id.* at 786.

[206] *Id.*(quoting WILLIAM L. PROSSER, TORTS § 8 at 31-32 (4th ed. 1971)).

[207] *Id.*

[208] *Id.*

[209] *Id.*

and as far away as possible, and, although any resulting contamination would be diminished as to any one area or landowner, contamination, though slight, was inevitable.[210]

Similarly, in *W.T. Ratliff Co. v. Henley*,[211] the Alabama Supreme Court found that a reasonable person could foresee that when it rained, sand and gravel could wash onto the plaintiff's property; thus, the element of intent was satisfied when the defendant placed the sand and gravel on its own property with knowledge to a substantial certainty that such action could lead to trespass when it rained.[212]

A trespass to chattels claim consists of an intent to touch. Applying the *Restatement*, a defendant has such an intent when he has a purpose of accomplishing that result or when there is a lack of purpose, the individual knows to a substantial certainty that his actions will bring about the result.[213] Although the results may not be desired, an individual is still held to have established intent if he had knowledge that such consequences were certain to arise from his actions.[214] To evaluate intent in crop contamination trespass to chattels cases, a court should consider the seed manufacturer's purpose and knowledge. A manufacturer, in producing and releasing a new seed, does so with the purpose of causing a market effect. Although the manufacturer intends for this effect to be positive, intent is not limited to desired consequences.[215] Therefore, when a manufacturer releases a new GE corn seed with the intent to enhance the market, but instead causes a negative market effect, the requisite intent to "touch" is satisfied.

Furthermore, even in the absence of such a purpose, intent is satisfied when the corn seed manufacturer knows that the release of an unapproved genetically-engineered seed trait is substantially certain to result in severe consequences.[216] As demonstrated in *Bradley* and *W.T. Ratliff Co.*, though an intervening factor, such as wind, rain, a farmer, or grain operator, may directly cause the damage, that does not defeat a claim that defendant was substantially certain that consequences would occur.[217] The consequences

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[210] *Bradley*, 709 P.2d at 786.

[211] *W.T. Ratliff Co.*, 405 So. 2d 141.

[212] Id. at 145-46; *see also* Rushing v. Hooper-McDonald, Inc., 300 So. 2d 94, 97 (Ala. 1974) (holding "it is not necessary that the asphalt or foreign matter be thrown or dumped directly and immediately upon the plaintiff's land but that it is sufficient if the act is done so that it will to a substantial certainty result in the entry of the asphalt or foreign matter onto the real property that the plaintiff possesses").

[213] RESTATEMENT (SECOND) OF TORTS § 8A cmts. a, b (1965).

[214] 405 So. 2d at 146.

[215] *See* RESTATEMENT (SECOND) OF TORTS § 8A cmt. b (1965).

[216] *Id.*

[217] *See Bradley* 709 P.2d at 786; *W.T. Ratliff Co.*, 405 So.2d at 146.

of other parties' intervening actions are not merely foreseeable, they are substantially certain to occur. Genetically-engineered seeds are developed and sold with the clear understanding that they will eventually be planted. A seed manufacturer's intentional release of an unapproved genetically-engineered variety of grain is substantially certain to result in cross-pollination or commingling resulting from its own actions or the actions of others (i.e., farmers or grain elevator operators). Such crop contamination inevitably results in the devaluation of entire grain markets.

From a policy perspective, the increase in crop contamination by unapproved crops and warnings from the biotech industry itself have undoubtedly shifted the threat of contamination and market harm from a mere risk to a substantial certainty. The biotech industry recognized that premature commercialization could cause significant trade disruptions and enormous harm to farmers and other industry participants.[218] The Biotechnology Industry Organization ("BIO") and other industry stakeholders developed various stewardship polices, all of which require approval of new genetic traits in each major export market before commercialization.[219] For example, BIO, the world's largest biotechnology trade association,[220] states that asynchronous approvals combined with zero tolerance policies for GE products not yet authorized in importing countries, can result in major trade disruptions.[221] These stakeholder-derived stewardship policies, of which Syngenta is a member,[222] have created an industry best practices standard,[223] which require firms to refrain from commercialization before products are approved by all significant importing nations.[224] In light of these industry policies and previous crop

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[218] BIOTECHNOLOGY INDUSTRY ORG., PRODUCT LAUNCH STEWARDSHIP POLICY, at Annex 1 (Nov. 27, 2012) [hereinafter BIO PRODUCT LAUNCH STEWARDSHIP POLICY], http://www.bio.org/sites/default/files/Product-Launch-Stewardship-11272012.pdf; *see* Complaint at ¶¶ 80-81, Five Star Farms v. Syngenta AG, 2:14-cv-02571 (D. Kan., Nov. 11, 2014).

[219] BIO PRODUCT LAUNCH STEWARDSHIP POLICY, *supra* note 218.

[220] *About BIO*, BIOTECHNOLOGY INNOVATION ORGANIZATION (2016), http://www.bio.org/articles/about-bio.

[221] *Id.*

[222] *BIO Members & Web Site Links*, BIOTECHNOLOGY INNOVATION ORGANIZATION (2016), https://www.bio.org/articles/bio-members-web-site-links.

[223] *See* Thomas P. Redick & Donald L. Uchtmann, *Coexistence Through Contracts: Export-Oriented Stewardship in Agricultural Biotechnology vs. California's Precautionary Containment*, 13 DRAKE J. AGRIC. L. 207, 220 (2008).

[224] This was highlighted in the recent case *Syngenta Seeds Inc. v. Bunge North America*, 820 F.Supp.2d. 953 (N.D. Iowa 2011). Bunge, one of the world's largest agricultural trading houses, refused to handle Agrisure Viptera because of the risk of admixture with the rest of their corn supply. 820 F.Supp.2d. at 959-60. When Syngenta sued Bunge over the refusal, the court found that Bunge's decision to reject Agrisure Viptera was a legitimate business

contamination cases, it is impossible for GE seed manufacturers to claim they lack the substantial knowledge necessary to satisfy the intent requirement.[225]

D. *Contact with Chattel "Indirect Interference"*

As explained above, courts have embraced an elastic notion of trespass to chattel by sustaining claims for minor interferences "which consist of intermeddling with or use of another's personal property."[226] The defendant's contact with, or touch of, the chattel must be intentional, but may be either direct or indirect. Further, the traditional requirement that defendant make "physical" contact with the chattel has been greatly mitigated, as illustrated in cyberspace cases.[227] As one scholar has noted, "rather than serving as a severe limitation, . . . the requirement of interference provides a rather generous platform upon which to construct a trespass to chattels claim."[228]

For present purposes, pollen migrating from genetically-engineered crops owned or created by defendants to the crops of growers would appear to constitute indirect, and in fact physical, contact with the crops (chattels) of those growers. Similarly, commingling of genetically-engineered crop varieties with the plaintiffs' (or, in the class action context, other class members') natural varieties of crops constitutes indirect, physical contact with these chattels, thus satisfying this element of the tort. Such contact is not unlike the transmission of electronic signals upon a server, or the migration of dust, sound waves, or other intangibles upon personal property that has previously been deemed actionable.

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decision because comingling would preclude sales to China. *See id.* at 981-82. In December 2014, Syngenta dropped its ongoing case against Bunge after China approved MIR 162 and Bunge presumably would begin to accept the grain.

[225] *See* Wilson, *supra* note 194, at 198 (arguing that cross-contamination is "practically inevitable" as evidenced by the crop contaminations caused by StarLink corn and LibertyLink rice).

[226] eBay, Inc. v. Bidder's Edge, Inc., 100 F. Supp. 2d at 1070; *see also Thrifty-Tel*, 54 Cal. Rptr. 2d at 473 (citing RESTATEMENT (SECOND) OF TORTS § 217).

[227] *See CompuServe, Inc.*, 962 F. Supp. at 1021 (discussing electronic signals); *but see In re* Jetblue Airways Corp. Privacy Litig., 379 F. Supp. 2d 299, 327 (E.D.N.Y. 2005) ("To state a claim for trespass to chattels under New York law, plaintiffs must establish that defendants 'intentionally, and without justification or consent, physically interfered with the use and enjoyment of personal property in [plaintiffs'] possession,' and that plaintiffs were thereby harmed." (alteration in original) (*quoting* School of Visual Arts v. Kuprewicz, 3 Misc.3d 278, 771 N.Y.S.2d 804, 807 (N.Y.Sup.Ct.2003))).

[228] Michael R. Siebecker, *Cookies and the Common Law: Are Internet Advertisers Trespassing on Our Computers?*, 76 S. CAL. L. REV. 893, 915 (2003).

However, and as already noted, we contemplate an expansion of the trespass to chattels tort to provide a cause of action for growers who sell their chattels into the commodity supply chain because they can prove, more likely than not, that the GE variety's pollination or commingling in transportation or storage of *some* crops within the crop market resulted in a market-wide price decline and other negative effects.[229] Thus, all growers realize losses because the GE varieties have indirectly "touched" *all* crops within that interconnected market. Economic harm results when a grower prices his or her crops and introduces them into the commodity supply chain. The GE seed patent holder "touches" the grower's crop when infiltration of GE crops into the U.S. market has been disclosed, thus resulting in import bans by other countries that normally import the U.S. crop.[230] In such cases, growers should not be required to prove that their specific crops are contaminated in part or whole via pollination, commingling, or other methods by the GE variety *before* their crops entered the commodity supply chain. Rather, because they can prove that their chattels will be "touched" once introduced into the commodity system, plaintiff growers have been damaged as a result of selling their crop into that system and realizing lower prices than they would have but for a market-wide price decline caused by defendants' introduction of the genetic trait into the market.[231] Such harm is explored more fully below.

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[229] We emphasize the requirement of intent to establish a trespass to chattels claim. Negligent harms, while subject to other claims, would be insufficient to impose liability under our proposed market loss theory.

[230] Other damages may, of course, also be sought. In the In re *Genetically Modified Rice Litigation*, plaintiffs alleged that two rice varieties, Cheniere and CL 131, banned from planting for the 2007 crop year because of LLRICE contamination, forced some plaintiffs to plant lower-yield seed varieties that reduced harvest size and value. *In re* Genetically Modified Rice Litig., 251 F.R.D. 392, 394 (E.D. Mo. 2008).

[231] Contamination of crops with genetically-engineered varieties may occur as the result of defendants' failure to observe conditions to federal agency approval of the variety for introduction to the market, combined with standard industry practices that routinely result in cross-pollination or comingling of varieties of the grain. Plaintiff growers who did not intentionally or knowingly cause the comingling or cross-pollination that gave rise to the market-wide price decline should have access to the trespass to chattels action. Specific conditions for inclusion in a class of growers are beyond the scope of this Article, because such conditions will vary depending on the type of crop at issue and the conditions giving rise to the price decline. However, one could envision that defendants would argue that grower plaintiffs, in order to assert the tort, must not have knowingly or intentionally purchased or grown the genetically-engineered variety of seeds or crops or knowingly or intentionally caused or negligently failed to prevent the contamination alleged. Bayer, for instance, filed a counterclaim against BASF, arguing that BASF's negligence contributed to the damages BASF had claimed as a result of contamination of Clearfield 131 rice. ANNUAL REPORT 2013: FINANCIAL STATEMENT, LEGAL RISKS, Bayer AG (July 29, 2014), http://www.annualreport2013.bayer.com/en/legal-risks.aspx.

E. Substantial Harm "Direct Harm/Actual Damage"

Harm resulting from a trespass to chattels in the agricultural context is likely to be based not only on the actions of a grower in attempting to price or sell a given commodity, but also on an examination of the crop market before and after the intrusion of the GE trait and the disclosure of that intrusion.

Harm to growers who received lower prices than they would have but-for crop contamination should be actionable as a trespass to chattels, which has been recognized not only where the chattel itself is harmed, but also where the possessor or some person or thing in which the possessor has a legally protected interest is harmed.[232] As courts, particularly in the cyber-trespass cases, have recognized, a trespass that deprives the owner of an interest in or the use of the chattel, even temporarily, is actionable even where the chattel itself is not harmed. Thus, courts should recognize a trespass to chattels based on the physical intrusion into a crop market of a genetically-engineered crop trait whose contact with such market causes a grower to be deprived of full "use" of his/her harvested crops for purposes of pricing. Stated differently, to the extent that a price is based on the intrusion of the GE trait into the market as opposed to other market factors, the grower is deprived of the use of the chattel and should be compensated accordingly. Compensation should be available for the entire period during which a grower suffers market loss due to crop contamination. Such calculation is consistent with the traditional measure of damages for a successful trespass to chattels claim, which takes into account the entire impairment period, "from the time of the taking until the return of the goods," rather than fixing damages at one particular point of conversion or impairment.[233]

VII. CONCLUSION

As in the cyberspace setting, doctrinal stretching of the elements of trespass to chattels is appropriate for the modern-day problem of genetically-engineered crop varieties that cause market-wide price declines owing to mechanisms such as pollen drift and commingling with other crop varieties according to standard industry practices. While current jurisprudence may already be sufficiently flexible to recognize that trespass to chattels claims may be supported based upon scientific validation of taint of individual growers' specific crops, a broader interpretation of trespass to chattels is needed to allow recovery by growers who suffer losses owing to

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[232] RESTATEMENT (SECOND) OF TORTS § 218 (1965).

[233] *Staub*, 376 A.2d at 1133.

the resulting market-wide price decline due to the inevitability of actual contamination of their chattels as part of the overall in the commodity supply chain. In sum, a trespass to chattels claim, as properly applied in the genetically-engineered crop context, requires the plaintiff to prove: (1) that the GE seed patent holder intended intermingling of its genetic trait within the commodity supply chain; (2) that commodity supply chain intermingling occurred; and (3) that a commodity price drop occurred, causing damages to all commodity producers.

Recognition of trespass to chattels as to such plaintiffs is warranted in light of practical industrial and economic realities. A market-wide price decline of a crop resulting from taint with a genetically-engineered variety signals that the entire market is affected, and causes growers to bear their losses regardless of whether their specific crops are actually cross-bred with the genetically-engineered variety *before* entering the supply chain. Rather, the trespass will *inevitably* occur and cannot be avoided because of the substantial certainty of contact between a plaintiff's (and indeed, an entire class of all growers') crops with the invading trait once those crops are introduced into, and priced based on, the commodity pricing system. Observing a technical distinction between the farmers who prove tainting of their crops before they are introduced into the commodity system and the farmers who can only prove such tainting after introduction into the commodity supply chain merely serves to punish growers on an arbitrary basis that is unjustified by competing public policy or due process considerations. Furthermore, in broad terms, expanding the trespass to chattels tort internalizes the costs of risky activities upon those who create and control such risks, compensates victims where such risks materialize, and vindicates the inviolability of victims' property rights. Holding GE seed patent holders liable for market loss due to genetic cross-contamination places liability on the parties in the best position to assess and control the risk of future crop contamination.[234] The availability of an expanded and modernized trespass to chattels in crop contamination cases provides the most efficient recourse for recovery to farmers who suffer losses in market value of their crops.[235]

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[234] Wilson, *supra* note 160, at 194.

[235] *Id.*

YOU SAY YOU WANT A CHEVROLUTION? FACTORS PREDICTING THE ADOPTION OF THE *CHEVRON* STANDARD IN AGENCY DEFERENCE AT THE STATE LEVEL

By Dan Rempala
University of Hawai'i at Mānoa

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I. INTRODUCTION

Standards of deference to administrative agencies can be used as a weapon in power struggles between the executive and judicial branches.[1] At the state level, allowing a great deal of deference to executive agencies removes interpretive power from the courts and places that power with individuals who often are appointed by governors.[2] State courts vary dramatically in the degree to which they defer to the interpretation of state agencies, with some adopting the equivalent of the *Chevron* standard and providing strong deference,[3] some treating interpretation issues *de novo*,[4] regardless of the input from state agencies, and yet others treating agency decisions as non-binding expert opinions.[5] In a 2009 article, Zachary Hudson argued that the existence of varying deference standards constituted a positive development.[6] He claimed that, given the differences in political accountability of judiciaries across the states and the differences in the types of issues that state versus federal agencies handle, it only makes sense that states adopt a deference standard that considers both expertise and accountability.[7] Other scholarly publications, such as Aaron Saiger's comprehensive 2014 article, offer potential reasons as to why states have adopted the specific deference standards that they have.[8] Saiger's article uses a three-category system for dividing states based on deference standards: states that explicitly reject *Chevron* (e.g., Delaware),[9] states that

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[1] *See* Sanford N. Caust-Ellenbogen, *Blank Checks: Restoring the Balance of Powers in the Post-Chevron Era*, 32 B.C. L. REV. 757, 812-813 (1991) ("Courts must enjoy unrestricted power to review agency determinations of law because . . . too much power would be concentrated in the executive branch.").

[2] *See* Aaron Saiger, *Chevron and Deference in State Administrative Law*, 83 FORDHAM L. REV. 555, 560 (2014) ("Chevron [sic] is fundamentally a judicially articulated restriction on judicial power.").

[3] *Chevron Deference*, BLACK'S LAW DICTIONARY 289 (10th ed. 2014) ("A two-part test under which a court will uphold a federal agency's construction of a federal statute if (1) the statute is ambiguous or does not address the question at issue, and (2) the agency's interpretation of the statute is reasonable.").

[4] *Judicial Review*, BLACK'S LAW DICTIONARY 976 ("de novo judicial review [is] . . . a court's nondeferential review of an administrative decision, [usually] through a review of the administrative record plus any additional evidence the parties present.").

[5] *See* D. Zachary Hudson, *A Case for Varying Interpretive Deference at the State Level*, 119 YALE L.J. 373, 374 (2009).

[6] *Id.* at 381-82.

[7] *Id.* at 375-380.

[8] *See* Saiger, *supra* note 2, at 557-82.

[9] *Id.* at 558 ("Delaware's Public Water Supply v. DiPasquale [sic] is often cited as the most explicit repudiation of the Chevron framework in the states.")(citing 735 A.2d 378 (Del. 1999)).

adopt the *Chevron* standard (e.g., Maine),[10] and states that are somewhere in between.[11]

The current article tests many of the factors proposed by the Saiger article, using a quantitative analysis, to determine which factors predict states' deference standards to a statistically significant degree.[12] In addition to the factors mentioned in Saiger's article, the current article examines whether the distribution of power between the executive and the judicial branches of state government predicts deference standards.[13]

This article begins with a brief discussion of the history of federal standards for deferring to administrative agencies, including the events leading up to the Supreme Court's *Chevron* decision in 1984 and the events that followed it. In Part III, the paper turns to deference standards at the state level and the proposed factors that are thought to predict whether a state supreme court adopts strong, moderate, or weak deference to state administrative agencies. Then, in Part IV, the article examines in greater depth three specific states that serve as examples of governments that utilize strong, moderate, and weak deference standards. Finally, in Part V, the article describes the set of statistical analyses conducted and their results. A general discussion of the findings is provided in Part VI, as well as suggestions for future research.

II. A BRIEF HISTORY OF FEDERAL DEFERENCE STANDARDS

The United States Supreme Court's standard on deference to administrative agencies' statutory interpretations has evolved dramatically over the last hundred years.[14] Prior to its pivotal 1984 decision in *Chevron, U.S.A., Inc. v. Natural Resources Defense Council*,[15] the U.S. Supreme Court treated agency determinations in a similar manner to expert testimony: under the best of circumstances, they merely had the "power to persuade" and deserved no outright deference.[16] Despite the vast institutional knowledge that a federal agency possessed, its stated position

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[10] *Id.* at 558-559 ("This," says the Maine Supreme Court, "is the same two-step analysis developed by the United States Supreme Court in Chevron [sic].") (citing Cobb v. Bd. Of Counselling Prof'ls Licensure, 896 A.2d 271, 275 (Me. 2006)).

[11] *Id.* at 559 ("Most of the states, however, fall between the extremes of endorsing Chevron [sic] and repudiating it.").

[12] *See infra* Part V.

[13] *See infra* Part V.

[14] *See* WILLIAM N. ESKRIDGE JR., PHILIP P. FRICKEY & ELIZABETH GARRETT, CASES AND MATERIALS ON STATUTORY INTERPRETATION 724-757 (2012).

[15] 467 U.S. 837 (1984).

[16] Skidmore v. Swift & Co., 323 U.S. 134, 140 (1944).

merely served as one of many non-binding sources of information that a court might draw upon to make a decision as to the meaning of a statute.[17]

In the wake of *Chevron*, federal agencies received considerable deference, as the Supreme Court established a two-part test, later dubbed the "*Chevron* two-step,"[18] for judicial bodies deciding the validity of an agency's statutory interpretation.[19] First, the court must determine "whether Congress has directly spoken to the precise question at issue."[20] This step mainly constitutes a textual analysis, such that, if the wording of the statute is clear and unambiguous in regard to the interpretive issue at hand, then Congress has "spoken" to that issue and no room remains for further interpretation.[21] Only if Congress failed to sufficiently address the issue does the inquiry continue on to the second step.[22] At that point, the issue was whether the agency's interpretation of the statutory issue was "reasonable."[23]An agency's interpretation is reasonable unless it was "arbitrary, capricious, or manifestly contrary to the statute."[24]Under such circumstances, the court accepted the interpretation.[25]Effectively, this created a transfer of broad, interpretive power away from the courts[26] and toward federal agency officials who had, in many cases, received appointments from the executive branch.[27] The main justifications for this shift were that in comparison to federal judges, who received lifetime appointments, agencies were more politically accountable[28] and possessed

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[17] *See id.* (concluding that the U.S. Department of Labor's determination regarding employee overtime payment was entitled to respect, but was not binding).

[18] *E.g.*, Michael Pappas, *No Two-Stepping in the Laboratories: State Deference Standards and Their Implications for Improving the Chevron Doctrine*, 39 MCGEORGE L. REV. 977, 978 (2008) ("Chevron [sic] announces the well-known, two-step standard for federal review of agency interpretation of the law.").

[19] *Chevron*, 467 U.S. at 842.

[20] *Id.*

[21] *See* ESKRIDGE ET AL., *supra* note 14,at 804 (explaining that further interpretation is only necessary "under general statutory language that does not target the interpretive issue").

[22] *Chevron*, 467 U.S. at 843.

[23] *Id.* at 844 ("In such a case, a court may not substitute its own construction of a statutory provision for a reasonable interpretation made by the administrator of an agency.").

[24] *Id.* at 843-844("If Congress has explicitly left a gap for the agency to fill, there is an express delegation of authority to the agency to elucidate a specific provision of the statute by regulation. Such legislative regulations are given controlling weight unless they are arbitrary, capricious, or manifestly contrary to the statute.").

[25] *Id.*

[26] *See* Scott A. Keller, *Texas versus Chevron: Texas Administrative Law on Agency Deference after Railroad Commission v. Texas Citizens*, 74 TEX. B.J. 984, 985 (2011).

[27] *See* Audrey Wall, *Chapter 4: State Executive Branch*, BOOK OF THE STATES 2010 tbl.4.10(June 1, 2010, 12:00 AM), http://knowledgecenter.csg.org/kc/content/book-states-2010-chapter-4-state-executive-branch.

[28] *Chevron*, 467 U.S. at 866 ("[F]ederal judges—who have no constituency—have a

greater expertise in the specific field that the statutory interpretation issues concerned.[29]

The *Chevron* decision created considerable controversy. In particular, many critics noted that the decision avoided any mention of the federal Administrative Procedure Act ("APA").[30] This statute, among other things, established that the federal courts possessed final authority in reviewing administrative agency determinations.[31] By failing to address the relationship of *Chevron* to the APA, the Supreme Court left scholars and pundits to argue whether *Chevron* subverted the intent of the APA, or whether the two were consistent with one another.[32] Whatever the perceived merits or drawbacks, most observers would agree that *Chevron* clarified the issue of federal court deference to agency interpretations by creating a relatively straightforward rule.[33]

Matters became considerably more convoluted years later, however, with decisions such as the Supreme Court's 2001 ruling in *U.S. v. Mead Corp.*,[34] which accorded agencies different levels of deference, depending on the nature of the interpretation the agencies were making.[35] The *Mead Corp.* majority determined that courts should apply a binding, *Chevron*-type standard of deference when an agency had arrived at its interpretation using a "relatively formal administrative procedure tending to foster the fairness and deliberation that should underlie such a pronouncement."[36] The court decided that administrative decisions involving less deliberative rulemaking (e.g., "interpretations contained in policy statements, agency manuals, and

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duty to respect legitimate policy choices made by those who do.").

[29] *Id.* at 843 ("Judges are not experts in the field. . . .").

[30] Administrative Procedure Act of 1946, Pub. L. No. 79-404, 60 Stat. 237 (recodified as amended in 5 U.S.C. §§ 551-559, 701-706, 1305, 3105, 3344, 4301, 5335, 5372, 7521 (2015)); *see, e.g.*, Cass R. Sunstein, *Beyond Marbury: The Executive's Power to Say What the Law Is*, 115 YALE L.J. 2580, 2586 (2006).

[31] 5 U.S.C. § 706 (2014) ("[T]he reviewing court shall decide all relevant questions of law, interpret constitutional and statutory provisions, and determine the meaning or applicability of the terms of an agency action.").

[32] *See* Saiger, *supra* note 2, at 570 ("[S]ome scholars argue that Chevron [sic] contravenes the [Administrative Procedures Act ("APA")], which they understand to require courts to review agencies' legal interpretations de novo. An opposing view understands Chevron [sic] to be careful to align itself with statutory principles of judicial review.").

[33] *See* Sunstein, *supra* note 30, at 2598 ("In Chevron [sic], the Court replaced the case-by-case inquiry with a simple rule. . . .").

[34] 533 U.S.218 (2001).

[35] *Id.*

[36] *Id.* at 230.

enforcement guidelines")[37] should receive less deferential treatment; a line of reasoning more in line with *Skidmore*.[38]

Supreme Court decisions in the vein of *Mead Corp.* have effectively created another pair of determinations the court must contemplate before awarding deference.[39] First, the court must determine whether the agency's interpretation resulted from a formal, deliberative process.[40] If the process is informal, the court must determine whether "Congress delegated authority to the agency generally to make rules carrying the force of law"[41] using a five-factor balancing test.[42] The factors in this balancing test include: "(1) breadth of the statutory delegation[;] (2) agency expertise[;] (3) consistently observed past agency interpretations[;] (4) agency deliberation, including procedures used for current agency interpretation[;] and (5) the nature of the question addressed by the current agency interpretation."[43]

By adding additional hurdles to providing deference to federal agencies, the judiciary has effectively retaken some of the interpretation power it ceded in *Chevron*.[44] So, while the federal deference standards on statutory interpretation still may be referred to as "*Chevron*" deference, at least at the federal level, "*Chevron* deference ain't what it used to be."[45]

III. PROPOSED PREDICTORS OF STATE COURTS' DEFERENCE TO AGENCY INTERPRETATIONS

There is no stare decisis[46] in the process of statutory interpretation,[47] nor is there any in how much deference a state court accords an administrative

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[37] Christensen v. Harris Cnty., 529 U.S. 576, 587 (2000).

[38] *See id.*; *Mead Corp.*, 533 U.S. at 234.

[39] *See* Keller, *supra* note 26, at 985.

[40] *See* Scott A. Keller, *How Courts Can Protect State Autonomy from Federal Administrative Encroachment*, 82 S. CAL. L. REV. 45, 67-68 (2008).

[41] *Mead Corp.*, 533 U.S. at 226-227.

[42] *See* Keller, *supra* note 40, at 68-69.

[43] *Id.* (citations omitted).

[44] *See Mead Corp.*, 533 U.S. at 228 (Factors now examined include "the degree of the agency's care, its consistency, formality, and relative expertness, and to the persuasiveness of the agency's position.").

[45] *See* Keller, *supra* note 26, at 985.

[46] BLACK'S LAW DICTIONARY 1626 (10th ed. 2014) (stare decisis is "[t]he doctrine of precedent, under which a court must follow earlier judicial decisions when the same points arise again in litigation").

[47] *Compare* Jonathan R. Siegel, *The Polymorphic Principle and the Judicial Role in Statutory Interpretation*, 84 TEX. L. REV. 339, 385-86 (2005) ("Time and again one sees the Court stating a principle of statutory interpretation without apparent qualification in one case, only to ignore it in the next.") *with* Sydney Foster, *Should Courts Give Stare Decisis*

body.[48] That means that, barring constitutional and statutory limitations, state supreme courts could use any sort of standard they please on this issue, leading to potential confusion regarding activity that involves multiple state jurisdictions.[49] Some scholars, however, have championed the idea that varying deference standards at the state level are a positive development because such a scheme allows for states to tailor policies appropriate for their particular set of circumstances, as opposed to adopting a one-size-fits-all approach.[50] This section describes some of those particular sets of circumstances.

A. Judicial Accountability

In his 2009 article, Hudson argued the positive aspects of variations in interpretive deference at the state level.[51] One of the initial arguments for creating the *Chevron* standard involved the greater political accountability of executive branch agents as compared to federal judges, who receive lifetime appointments.[52] In other words, it is a positive development when more politically accountable individuals are in charge of rulemaking, because the members of the electorate can remove the rule-makers when they disapprove of the rules enacted.[53] Since almost half of all state judges

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Effect to Statutory Interpretation Methodology?, 96 GEO. L.J. 1863, 1867 (2008) ("[C]ourts themselves can bring more consistency and predictability to statutory interpretation methodology by giving statutory doctrine stare decisis effect.").

[48] Hudson, *supra* note 5, at 374.

[49] *See, e.g.*, Abbe R. Gluck, *Intrastatutory Federalism and Statutory Interpretation: State Implementation of Federal Law in Health Reform and Beyond,* 121 YALE L.J. 534, 537-38 (2011) ("For all the focus in recent statutory interpretation doctrine and theory on the administrative state and on dialogic interpretation, we have virtually no doctrines or theories that acknowledge, much less account for, the role of state implementers in the hermeneutical project of federal statutory construction. Nor do we have any doctrines that attempt to recognize, much less negotiate, the relationship that is created between state and federal agencies when Congress gives them both concurrent authority to implement federal law but is ambiguous about how that authority should be allocated.").

[50] *See, e.g.*, Hudson, *supra* note 5, at 374-375; Saiger, *supra* note 2, at 561-62.

[51] Hudson, *supra* note 5, at 373-75.

[52] *Id.* at 373-74.

[53] *Compare* Abbe R. Gluck, *The States as Laboratories of Statutory Interpretation: Methodological Consensus and the New Modified Textualism,*119YALE L.J. 1750, 1816 (2010) ("State supreme court justices frequently interact with legislators and members of the state bar at professional, political, and social functions, and with ordinary citizens at election-related events in a way that U.S. Supreme Court justices do not. Thee interactions may make state justices more aware of the practical effects of their decisions and the complaints arising from inconsistent or indeterminate law.") *with* F. Andrew Hanssen, *Independent Courts and Administrative Agencies: An Empirical Analysis of the States*, 16 J.L. ECON. & ORG. 534, 535 (2000) ("[A]ppointed courts may be expected to be less

are directly selected in partisan or non-partisan elections (twenty-two of fifty states),[54] Hudson argued that the same justification for invoking the *Chevron* standard at the state-level does not apply.[55] Clearly, as leaders of the state's executive branch, most governors would prefer greater deference to agency interpretation, but Hudson's assertion implies an alternate consideration: the more politically accountable state judges are, the less likely they would be to invoke the *Chevron* standard.[56]

Although judicial accountability is frequently mentioned among factors associated with resistance or acquiescence to the executive,[57] the evidence does not always follow the logical argument. For example, a recent study examined 2,222 state supreme court cases and concluded there was no significant relationship between the method of judicial selection or retention (e.g., election, appointment, merit selection) and whether the court decided in favor of state agencies.[58]

B. Bundled Versus Unbundled Executives

On the issue of agency deference, the flipside of the presence of judicial accountability is the absence of executive accountability. States differ in terms of the number of members of the executive branch that are elected; executive branches with a high number of separately elected officials are referred to as "unbundled."[59] For example, in addition to the governor, many states also separately elect the lieutenant governor, the secretary of state, and the attorney general.[60]

An unbundled executive branch decentralizes the governor's power, but it can also serve to make a particular agency more directly accountable to the voters for the domain that it oversees, if the head of that agency is

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influenced by the political/electoral forces that underlie policy decisions of administrative agencies (at least to a degree), and accordingly, be more threatening to agency decisions.").

[54] *Judicial Selection in the States: Appellate and General Jurisdiction Courts*, AM. JUDICATURE SOCIETY, (last updated 2013) [hereinafter *Judicial Selection*], http://www.judicialselection.us/uploads/documents/Judicial_Selection_Charts_1196376173077.pdf.

[55] Hudson, *supra* note 5, at 373-74.

[56] *Id.*

[57] *Id.* at 373-74; Saiger, *supra* note 2, at 561.

[58] Gbemende Johnson, *Judicial Deference and Executive Control Over Administrative Agencies*, 14 STATE POLITICS & POLICY QUARTERLY 142, 152-53 tbl.1 (2014).

[59] Christopher R. Berry & Jacob E. Gersen, *The Unbundled Executive*, 75 U. CHI. L. REV. 1385, 1387 (2008).

[60] *See id.* at 1433 tbl.4; Wall, *supra* note 27. A total of fourteen states independently elect the lieutenant governor, the attorney general, and the secretary of state: Alabama, Arkansas, California, Georgia, Idaho, Louisiana, Missouri, Nevada, North Carolina, Rhode Island, South Carolina, Vermont, Washington, and West Virginia.

directly chosen by the electorate.[61] Thus, an unbundled executive branch would justify use of the *Chevron* standard even more than would a bundled executive branch, because the agency heads would be directly accountable to the voters for their rulemaking determinations, rather than merely bearing responsibility as a proxy of the governor.[62]

C. Administrative Expertise

Another central justification for *Chevron* deference is that administrative bodies are comprised of experts in the technical aspects of the topic at issue, while judicial bodies are not.[63] Hudson, however, argues that matters that state agencies address generally require lower levels of technical sophistication as compared to those addressed by federal agencies.[64] Alternatively, others argue that, while state agencies may handle their share of sophisticated issues,[65] they are often understaffed or underfunded, and many employees often involuntarily work on a part-time basis.[66]

While this lack of technical expertise and professionalism provides a sound reason for states, in general, to not adopt the *Chevron* standard, it does little to explain the decisions of individual states to adopt a particular standard, unless states vary greatly and predictably in terms of the tasks that they require of their administrative agencies and the capabilities of those agents. For example, this reasoning would imply that West Virginia, which has adopted a policy similar to the *Chevron* standard, requires many highly technical decisions from its executive agencies in regard to statutory interpretation,[67] while Washington (a *de novo* state) does not.[68] While states undoubtedly demonstrate distinct differences from one another in this

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[61] *See* Saiger, *supra* note 2, at 565-66.

[62] *See id.*

[63] *Chevron*, 467 U.S. at 865 ("Judges are not experts in the field . . . .").

[64] Hudson, *supra* note 5, at 378-79 ("Federal courts must deal with issues stemming from statutory interpretations rendered by agencies like the Federal Energy Regulatory Commission, the Federal Communications Commission, and the Food and Drug Administration that can be substantively challenging due to their scientific and technical nature. By way of comparison, many state agencies are concerned with solely domestic matters like public safety and family services.").

[65] *See* Saiger, *supra* note 2, at 580 ("It is certainly true that complex and sophisticated state agencies confront statutory regimes and complex policy problems in areas like transportation, environmental quality, K-12 schooling and higher education.").

[66] *See* William Funk, *Rationality Review of State Administrative Rulemaking*, 43 ADMIN. L. REV. 147, 168-69 (1991) ("Nevertheless, it is argued that many state agencies are small with little or no professional staff, and in some cases run on a part-time basis by persons whose primary jobs are elsewhere.").

[67] Pappas, *supra* note 18, at 1023.

[68] *Id.*

regard, it seems doubtful that state supreme courts are making their deference decisions based on careful studies of the technical competence of a state agency's employees.

Another issue involves the practical application of this premise. There does not appear to be any published research as to which states have the most competent executive agencies and which have the least. Furthermore, if such a metric existed, it would likely be subject to great intrastate variability, depending on which specific agencies were at issue and which governor was appointing agency heads.

D. Legislative Delegation

A final proposed factor influencing a state's decision to adopt the *Chevron* standard involves the ability of the state legislature to delegate legislative power to executive agencies.[69] At the federal level, the "Nondelegation Doctrine" refers to the idea that it is Congress' job to legislate, and that delegation of legislative ability to entities other than Congress violates Article I of the U.S. Constitution.[70] In his exhaustive analysis of the Nondelegation Doctrine, Jim Rossi cites three Supreme Court cases from the 1930's that indicate a strong stance on nondelegation.[71] In *Panama Refining Co. v. Ryan*[72] and *A.L.A. Schechter Poultry Corp. v. United States*,[73] the Supreme Court struck down a Congressional attempt to delegate legislative power to the President.[74] In *Carter v. Carter Coal Co.*,[75] the Supreme Court invalidated a statute that effectively delegated legislative power to a private industry.[76] Since that time, however, the federal approach to nondelegation has weakened considerably, to the point where legislative delegation is rarely challenged and, according to Rossi's analysis from 1999, those challenges that do occur are never successful.[77]

Since the federal government has adhered to a weak nondelegation doctrine in modern times, Congress can *implicitly* delegate such power by keeping some aspect of a statute ambiguous and leaving it up to the agency

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[69] *See* Saiger, *supra* note 2, at 568-70.

[70] *See* Jim Rossi, *Institutional Design and the Lingering Legacy of Antifederalist Separation of Powers Ideals in the States*, 52 VAND. L. REV. 1167, 1177 (1999).

[71] *Id.* at 1177-78.

[72] 293 U.S. 388 (1935).

[73] 295 U.S. 495 (1935).

[74] *See* Rossi, *supra* note 70, at 1177-78.

[75] 298 U.S. 238 (1936).

[76] *Id.* at 311.

[77] *See* Rossi, *supra* note 70, at 1178 ("Since 1935, the Supreme Court has not invalidated a single statute on nondelegation grounds.").

to interpret.[78] This is one of the major justifications for the *Chevron* standard (e.g., if an issue is within the purview of the agency and Congress has not specifically interpreted the issue, the agency may do so and receive deference from the judiciary).[79] States vary considerably in the extent that they adhere to this restriction. Some state courts (from states that Rossi refers to as "weak nondelegation states") uphold nearly all delegations of power to agencies as long as certain procedural safeguards are in place.[80] A second group of state courts (from "strong nondelegation states") are far more restrictive than the federal government in allowing the legislature to delegate power to executive agencies.[81] The final group of state courts (from "moderate nondelegation states")[82] "does not always require specific standards, but may vary the degree of standards necessary depending on the subject matter of the statute or the scope of the statutory directive."[83]

If a state legislature is capable of easily delegating legislative power to a state agency and chooses to explicitly refrain from doing so, this would seem to indicate that the legislature did not intend for an agency to assume a legislative role (i.e., adoption of the *Chevron* standard would be superfluous).[84] On the opposite end of the spectrum, if a state has rigorous standards for legislative delegation, one would expect that the mere presence of statutory ambiguity would prove insufficient for an agency to be allowed to take on a legislative role (i.e., adoption of the *Chevron* standard would be prohibited).[85] Only in this middle area, with the so-called "moderate nondelegation" states, would the *Chevron* standard seem

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[78] *See* Saiger, *supra* note 2, at 569 ("The 'implicit' delegation by the Congress to the agency that Chevron sees in the passage of an ambiguous act that does not 'directly' speak 'to the precise question at issue' sets up statutory ambiguity.") (citing *Chevron*, 467 U.S. at 842).

[79] *Id.*

[80] Rossi, *supra* note 69, at 1191-1200. Weak nondelegation states include Arkansas, California, Iowa, Maryland, Oregon, Wisconsin, and Washington. *Id.*

[81] *Id.* at 1193-1200. Strong nondelegation states include Arizona, Florida, Illinois, Kentucky, Massachusetts, Montana, Nebraska, Nevada, New Hampshire, New Mexico, New York, Ohio, Oklahoma, Pennsylvania, South Dakota, South Carolina, Texas, Utah, Virginia, and West Virginia. *Id.*

[82] *Id.* at 1199-1200. Moderate nondelegation states include Alabama, Alaska, Colorado, Connecticut, Delaware, Georgia, Hawai'i, Idaho, Indiana, Kansas, Louisiana, Maine, Michigan, Minnesota, Mississippi, Missouri, New Jersey, North Carolina, North Dakota, Rhode Island, Tennessee, Vermont, and Wyoming. *Id.*

[83] *Id.* at 1198.

[84] *See* Saiger, *supra* note 2, at 569 ("[T]he presence of an ambiguity less plausibly indicates that the legislature intended, by the fact of ambiguity, such a delegation.").

[85] *See id.* ("[T]he mere fact of ambiguity again seems a less convincing basis upon which to imply a delegation.").

applicable, because it would help to clarify the conditions under which the state agency could engage in statutory interpretation.[86]

IV. THE STATE OF THE STATES

Michael Pappas divided state deference standards into three categories: (1) states that adopted the equivalent of the *Chevron* standard;[87] (2) states that allowed some deference to agency decisions but stopped short of *Chevron*;[88] and (3) states that reviewed agency interpretations *de novo*.[89] Breaking temporarily from broad generalities, this section will examine in greater depth a representative from each of these three categories and indicate where they stand in terms of the factors discussed above.

A. The Chevron Standard Finds Aloha in Hawai'i

The Hawai'i Supreme Court's first reference to *Chevron*[90] was in a 2000 decision featuring water use permit applications.[91] It was only used, however, in reference to the aspect of *Chevron* that involved the inquiry ending if the legislature was unambiguous, and did not address the issue of agency deference.[92] In that same discussion, however, the court cited two Hawai'i Supreme Court decisions that explicitly dealt with that issue. In the first, *Keliipuleole v. Wilson*,[93] the court ruled that:

> [it] is a well-established rule of statutory construction that, where an administrative agency is charged with the responsibility of carrying out the mandate of a statute which contains words of broad and indefinite meaning, courts accord persuasive weight to administrative construction and follow the same, unless the construction is palpably erroneous."[94]

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[86] *See id.*

[87] Pappas, *supra* note 18, at 1010-24. *Chevron* states include Alabama, Connecticut, Florida, Georgia, Hawai'i, Indiana, Maine, Michigan, Mississippi, Montana, Pennsylvania, South Carolina, Tennessee, Vermont, West Virginia, and Wyoming. *Id.*

[88] *Id.* at 1010-24. States that give some deference include Arizona, Arkansas, Colorado, Idaho, Illinois, Kansas, Kentucky, Massachusetts, Missouri, Nevada, New Jersey, North Carolina, North Dakota, Ohio, Oregon, Rhode Island, Texas, and Wisconsin. *Id.*

[89] *Id.* at 1010-24. *De novo* states include Alaska, California, Delaware, Iowa, Maryland, Minnesota, Nebraska, New Hampshire, New Mexico, New York, Oklahoma, Utah, Virginia, and Washington. *Id.*

[90] 467 U.S. 837.

[91] In re Water Use Permit Applications, 94 Hawai'i 97, 144, 9 P.3d 409, 456 (2000).

[92] *Id.*("If we determine, based on the foregoing rules of statutory construction, that the legislature has unambiguously spoken on the matter in question, then our inquiry ends.").

[93] 85 Hawai'i 217, 941 P.2d 300 (1997).

[94] *Id.* at 226, 941 P.2d at 309(citing Treloar v. Swinerton & Walberg Co., 65 Haw. 415,

In the second decision, *Richard v. Metcalf*,[95] the court determined that "judicial deference to agency expertise is a guiding precept where the interpretation and application of broad or ambiguous statutory language by an administrative tribunal are the subject of review."[96] The court further clarified its position by citing a U.S. Supreme Court case, declaring,[97] "[s]uch deference 'reflects a sensitivity to the proper roles of the political and judicial branches,' insofar as the 'resolution of ambiguity in a statutory text is often more a question of policy than law.'"[98]

In several cases since 2000, the Hawai'i Supreme Court has used these three cases in combination with one another to illustrate the identical point.[99] With this stock analysis, the Hawai'i Supreme Court effectively adopted the *Chevron* standard, and for the same reason as originally articulated by the U.S. Supreme Court—the executive is more accountable to the mood of the electorate than the court.[100] This does not mean, however, that the standard is universally appreciated by members of the Hawai'i judiciary. In a recent interview, Justice Simeon Acoba, who served on the Hawai'i Supreme Court from 2000 to 2014,[101] characterized the issue of agency deference as a "struggle," with the executive and judicial branches vying to move the line that indicates which body would have the ultimate say in statutory interpretation.[102]Justice Acoba described the contest, at its core, as a separation of powers issue, in which the judiciary

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424, 653 P.2d 420, 426 (1982)) (brackets in original).

[95] 82 Hawai'i, 249, 252, 921 P.2d 169, 172 (1996).

[96] *Id.* at 252, 921 P.2d at 172 (quoting Vail v. Emps.' Ret. Sys., 75 Hawai'i 42, 59, 856 P.2d 1227, 1237 (1993)) (ellipses and brackets omitted).

[97] *In re* Water Use Permit Applications, 94 Hawai'i at 144, 9 P.3d at 456 ("If we determine, based on the foregoing rules of statutory construction, that the legislature has unambiguously spoken on the matter in question, then our inquiry ends.").

[98] *Id.* at 145, 9 P.3d at 456 (quoting Pauley v. Beth Energy Mines, Inc., 501 U.S. 680, 696 (1991)).

[99] *See, e.g.*, Honda v. Bd. of Trs. of the Emps.' Ret. Sys., 108 Hawai'i 212, 231-32, 118 P.3d 1155, 1174-75 (2005) (A deceased civil service employee had left his wife no survivor benefits, and the state's Employees' Retirement System Board determined that the employee had understood his retirement options.).

[100] *Chevron*, 467 U.S. at 865 ("While agencies are not directly accountable to the people, the Chief Executive is, and it is entirely appropriate for this political branch of the Government to make such policy choices. . . .").

[101] *See* William S. Richardson School of Law, *Simeon R. Acoba, Jr.* https://www.law.hawaii.edu/person/simeon-r-acoba-jr (last visited Feb. 17, 2015).

[102] Interview with Simeon R. Acoba, Jr., Retired Justice of the Hawaii Supreme Court, in Honolulu, Haw. (Feb. 17, 2015).

ideally served as a check against executive power.[103] "If there is no review," he explained, "there's no check."[104]

In terms of proposed predictors of agency deference, there are a few factors that would predict Hawai'i's use of *Chevron* deference.[105]Regarding judicial independence, members of the Hawai'i Supreme Court are selected via a merit system and serve ten-year terms (which is substantially longer than the national average of 6.26 years for state supreme court justices with term limits).[106] This factor would be moderately predictive of *Chevron* adoption because some scholars have predicted that a less politically accountable judiciary would necessitate adoption of the *Chevron* standard.[107] In terms of executive bundling, Hawai'i directly elects only its Governor[108] and Lieutenant Governor.[109] This would be predictive of *de novo* adoption because bundled executive branches make individual agencies less politically accountable.[110] In terms of legislative delegation, Hawai'i is a "moderate nondelegation state."[111] This would be predictive of *Chevron* adoption because the *Chevron* standard would serve no purpose in strong or weak nondelegation states.[112]

B. Ambiguity Deep in the Heart of Texas

The standard that Texas uses to determine the legitimacy of agency statutory interpretation is similar to what the federal government has used post-*Mead Corp.*[113]For instance, the Texas Supreme Court determined that statutory interpretations by agencies deserved considerable weight, so long as the interpretation did not contradict the plain language of the statute.[114] Decisions by the Texas Supreme Court have also identified certain conditions that allow it to avoid agency deference.[115]

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[103] *Id.*

[104] *Id.*

[105] *See supra* Part III.

[106] *See Judicial Selection*, *supra* note 54 (this is the author's own calculation based on data from the cited source).

[107] *See* Hudson, *supra* note 5, at 373-74.

[108] HAW. CONST. art. V, § 1.

[109] HAW. CONST. art. V, § 2.

[110] *See* Saiger, *supra* note 2, at 565-66.

[111] Rossi, *supra* note 70, at 1199.

[112] *See* Saiger, *supra* note 2, at 569.

[113] *See* Keller, *supra* note 26, at 985.

[114] *See id.*

[115] *See id.* at 986 ("The Texas Supreme Court has given itself multiple outs to reject agency deference even if the federal *Chevron* inquiry would require deference.").

For example, in *Railroad Commission of Texas v. Texas Citizens for a Safe Future*,[116] the Texas Supreme Court determined that it owed no deference to the state's Railroad Commission regarding a decision to grant permits to a company to operate a gas injection well,[117] even though it had established that the Commission's interpretation in question had been formulated through formal procedures.[118] Unlike what would occur in a federal court's statutory analysis under *Chevron*,[119] the Texas Supreme Court determined that it also needed to establish that the Commission's interpretation fell within its area of expertise and was "long-standing."[120]

Scott Keller asserts that one reason that the Texas Supreme Court has not had to definitively reconcile differences between state and federal standards on administrative deference is that it is fond of discarding agency interpretations by deciding that the statute is not ambiguous (and, thus, does not require agency interpretation).[121] For example, in the recent case of *Liberty Mutual Insurance Company v. Adcock*,[122] the Texas Supreme Court addressed whether an insurance company could reopen a worker's compensation case years after it had been decided.[123] The Texas Department of Insurance asserted that it had the authority to do so.[124] The Texas Supreme Court decided that the Department of Insurance had no such power, noting that the court did not owe the agency deference because:

such deference is in direct conflict with the "well-established principle that" administrative agencies "may exercise only those powers that the Legislature confers on upon [them] in *clear and express language*, and cannot erect and exercise what really amounts to a new or additional power for the purpose of administrative expediency.[125]

As for proposed predictors of agency deference, Texas possesses a mix of countervailing influences. In terms of judicial independence, members of the Texas Supreme Court are elected via partisan election and serve six-year terms (which is only slightly below the national average of 6.26 years for state supreme court justices with term limits).[126] This factor would be

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[116] 336 S.W.3d 619 (Tex. 2011).

[117] *Id.* at 634.

[118] *Id.* at 628-629.

[119] *See* Keller, *supra* note 26, at 986.

[120] *R.R. Comm'n of Tex.*, 336 S.W.3d at 628-29.

[121] Keller, *supra* note 26, at 986, 988.

[122] 412 S.W.3d 492 (Tex. 2013).

[123] *Id.* at 493-94.

[124] *Id.*

[125] *Id.* at 498 (quoting Tex. Natural Res. Conservation Comm'n v. Lakeshore Util. Co., 164 S.W.3d 368, 377 (Tex.2005)).

[126] *See Judicial Selection*, *supra* note 54 (this is the author's own calculation based on

moderately predictive of *de novo* adoption.[127] In terms of executive bundling, Texas elects its Governor, Lieutenant Governor, Attorney General, Comptroller of Public Accounts, Commissioner of General Land Office, Commissioner of Agriculture, and the Commissioners of the Railroad Commission of Texas.[128] This would be moderately predictive of *Chevron* adoption.[129] In terms of legislative delegation, Texas is a "strong nondelegation state."[130] This would be predictive of adopting a *de novo* standard.[131]

C. Delaware: First in Chevron Rejection

Delaware is often cited in the agency deference literature as an example of a *de novo* state.[132] In one case on point, the Delaware Supreme Court reviewed a decision by the state's Department of Natural Resources and Environmental Control regarding the issuance of potable water permits.[133] Initially, the Superior Court had applied a deferential standard of review to the agency decision and upheld the agency's grant of the well permits in question.[134] The Delaware Supreme Court, however, determined that:

> the standard of judicial review of agency determinations of issues of statutory construction articulated in *Eastern Shore*[is]overly deferential and confusing. Accordingly, it is overruled. Statutory interpretation is ultimately the responsibility of the courts. A reviewing court may accord due weight, but not defer, to an agency interpretation of a statute administered by it. A reviewing court will not defer to such an interpretation as correct merely because it is rational or not clearly erroneous.[135]

Later in the decision, the court specifically addressed the *Chevron* standard:

> We expressly decline to adopt such a standard with respect to review of an agency's interpretation of statutory law and reaffirm our plenary standard of review. . . . Even if we were invited to consider the merit of

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data from the cited source).

[127] *See* Hudson, *supra* note 5, at 373-74.

[128] Texas Secretary of State, *Statewide Elected Officials* (last updated, Feb. 14, 2015), http://www.sos.state.tx.us/Elections/voter/elected.shtml.

[129] *See* Saiger, *supra* note 2, at 565-66.

[130] *See* Rossi, *supra* note 70, at 1193-94.

[131] *See* Saiger, *supra* note 2, at 569.

[132] *See, e.g.*, ESKRIDGE ET AL., *supra* note 14, at 804.

[133] Public Water Supply Co. v. DiPasquale, 735 A.2d 378, 379-80 (Del. 1999).

[134] *Id.* at 380.

[135] *Id.* at 382-83 (citations omitted).

Chevron's teaching, this case does not provide an appropriate setting to do so.[136]

A decade and a half later, Delaware is still using a *de novo* standard and is still citing *Public Water Supply Co. v. DiPasquale* while doing so,[137] albeit with more nuance.[138]

As with Hawai'i and Texas, some of Delaware's characteristics appear to possess dubious predictive ability when it comes to determining the state's deference standard. In terms of judicial independence, members of the Delaware Supreme Court are selected via a merit system and serve twelve-year terms (which is almost twice the national average of 6.26 years for state supreme court justices with term limits).[139] This factor is moderately predictive of *Chevron* adoption.[140] In terms of executive bundling, Delaware elects its Governor, Lieutenant Governor, Attorney General, Auditory of Accounts, Insurance Commissioner, and State Treasurer.[141] This factor is moderately predictive of *Chevron* adoption.[142] In terms of legislative delegation, Delaware is a "moderate nondelegation state."[143] This factor is also predictive of *Chevron* adoption.[144]

V. DATA ANALYSIS

Using an admittedly small sample size of three states, this cursory analysis of potential factors has yielded some mixed results. None of the sets of factors lined up in a direction that definitively and accurately would have predicted where Hawai'i and Delaware stand in terms of agency deference. The prediction for Texas was more accurate, given that Texas had a mixture of factors and ended up falling into the category between *Chevron* and *de novo*. Perhaps some of these proposed factors, while sounding plausible, may not be predictive of a state's agency deference at

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[136] *Id.* at 383.

[137] *See, e.g.*, Camtech School of Nursing and Technological Services v. Delaware Bd. Of Nursing, No. 91,2014, 2014 WL 4179199 at *3 (Del. Aug. 22, 2014).

[138] *See, e.g.*, Potter v. State, Dept. of Correction, No. 237,2013, 2013 WL 6035723, at *2 (Del. Nov. 13, 2013) ("Claims that the agency committed errors of law are reviewed de novo. Absent an error of law, we review an agency decision for abuse of discretion.").

[139] *Judicial Selection*, *supra* note 54 (this is the author's own calculation based on data from the cited source).

[140] Hudson, *supra* note 5, at 373-74.

[141] Government Information Center, *Your Government: Information on National and State-wide Elected Officials* (last updated, Feb. 15, 2015), http://www.delaware.gov/topics/yourgovernment.

[142] *See* Saiger, *supra* note 2, at 565-66.

[143] *See* Rossi, *supra* note 70, at 1198.

[144] *See* Saiger, *supra* note 2, at 569.

all. The next section will analyze these factors using a larger sample and a quantitative analysis to determine the efficacy of each factor in predicting deference standards.

This analysis required finding a way to quantify deference standards, gubernatorial power, executive bundling, judicial autonomy, and legislative delegation. As indicated previously, there is no current way to quantify administrative expertise.[145]Therefore, even though this may be an important factor, the instant analysis does not consider it.

The main analysis utilizes a linear regression. This is the appropriate analysis in this instance because it uses multiple ordinal variables to predict a single, ordinal outcome (or "dependent") variable.[146] The results are similar to a correlational analysis, but instead of simply measuring the relationship between two variables, the linear regression simultaneously uses a set of variables to predict the outcome variable.[147]

Gubernatorial Power was an additional factor added to the analysis, beyond those already discussed in Part III. Although not explicitly listed as a predictive factor in the agency deference literature, the argument for its inclusion represents a classic separation-of-powers perspective[148]: it is proposed that, independent of the other factors already mentioned, state supreme courts may be loath to cede power to the agents of an already powerful executive. So, the more powerful the executive, the less likely state courts will be to adopt the *Chevron* standard.

A. Dependent Variable: Deference Standards

Pappas divided state deference standards into three categories.[149] First, he identified sixteen states that adhered to the *Chevron* standard.[150] These were coded as "1." Second, he identified eighteen states that accorded some deference to agency interpretations, but did not go so far as

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[145] *See supra* Part III.C.

[146] *See* ROBERT ROSENTHAL & RALPH L. ROSNOW, ESSENTIALS OF BEHAVIORAL RESEARCH: METHODS AND DATA ANALYSIS 558 (2nd ed. 1991) ("In multiple regression the value of the predicted or outcome variable Y is viewed as depending on a, the intercept on the Y axis, and the values of the predictor variables. . . .").

[147] *See id.* at 558 ("A more technical usage would have us refer to *regression* in contexts where we want to relate changes in level of X to changes in level of Y, whereas we could refer to *correlation* as a more global index of closeness of relationship.") (emphasis retained).

[148] *See* Saiger, *supra* note 2, at 560 ("Chevron [sic] is fundamentally a judicially articulated restriction on judicial power. In this sense it rests upon federal separation of power doctrine . . . .").

[149] *See* Pappas, *supra* note 18, at 1010-1024.

[150] *Id.*

mimicking the *Chevron* standard.[151] These were coded as "2." Finally, there were fourteen states that gave agency interpretations minimal deference and dealt with interpretation issues *de novo*.[152] These were coded as "3."

This is not the only categorization system for state deference standards. For example, Ann Graham arranged four states on a continuum from "express adoption of *Chevron* doctrine to outright rejection of Chevron's applicability."[153] Illinois' deference standard was determined to be the most *Chevron*-like, followed by Texas and Florida.[154] Once again, Delaware wins the prize for being the exemplar of a Chevron-rejecting state, and occupies the end of the spectrum opposite Illinois.[155]These are the only four states that Graham arranges on this continuum, however, and in her analysis of the idiosyncrasies of each state court, Graham inadvertently illustrates the conundrum of using categorization systems of this type.[156] On the one hand, wedging these states into rigid categories washes out their individual character, but failing to do so would, on the other hand, lead to fifty, hyper-analyzed state courts arranged on a tentative continuum, rendering macro-level, quantitative analysis all but impossible. So, we are left with Pappas' three categories: *Chevron*; *de novo*; and somewhere in between *Chevron* and *de novo*.[157]

Pappas did not include South Dakota in his categorization scheme, because there were not enough of that state's supreme court decisions to make a categorization.[158] Nor did he include Louisiana, because that state utilizes a legal system based on French Civil Law.[159] Westlaw and LexisNexis searches determined that the South Dakota Supreme Court has invoked *Chevron* a total of three times, and in all three instances, it ruled in a manner consistent with the *Chevron* standard.[160] Conversely, the

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[151] *Id.*

[152] *Id.*

[153] Ann Graham, *Chevron Lite: How Much Deference Should Courts Give to State Agency Interpretation?*, 68 LA. L. REV. 1105, 1109 (2008).

[154] *Id.* at 1110-111.

[155] *Id.* at 1118-1119.

[156] *See id.*

[157] Pappas, *supra* note 18, at 1010-1024.

[158] *Id.* at 1021.

[159] *Id.* at 1015.

[160] *In re* GCC License Corp., 623 N.W.2d 474, 481 (S.D. 2001) ("[W]e give a federal agency's interpretation of the statutes it administers highly deferential review."); Mulder v. S.D. Dep't. of Social Servs., 675 N.W.2d 212, 214 (S.D. 2004) ("[T]he federal agency's determination will not be disturbed unless it is 'arbitrary, capricious, or an abuse of discretion.'"); *In re* D.M., 677 N.W.2d 578, 586 (S.D. 2004) ("Therefore, the Court 'does not simply impose its own construction on the statute as would be necessary in the absence of an administrative interpretation.'").

Louisiana Supreme Court invoked *Chevron* a total of five times, but, in each case, it did so only to assert that an agency must defer to the legislature when the legislature has clearly spoken on an issue, not to explain how a court should treat an agency's interpretation.[161] So, in terms of coding deference standards in the current study, South Dakota was included in the "1" category, but Louisiana remained uncategorized, excluding it from the analysis.

B. Predictor Variables

1. Gubernatorial power (and executive unbundling)

Governors can differ widely in terms of the powers that they wield.[162]In 1965, Joseph Schlesinger developed a methodology for determining a governor's relative strength: the Index of Formal Powers of the Governorship.[163] Since that time, Dr. Thad Beyle has expanded, updated, and relabeled the index as the Governor's Institutional Powers (GIP) score.[164]

GIP scores are composed of six components. First, it uses a rating based on the number of separately elected executive branch officials, and how many of those officials had the power to make policy (i.e., fewer elected officials means more appointed officials, which means greater gubernatorial strength).[165] This component overlaps almost completely with the concept of executive bundling, which is thought to be an independent predictor of the adoption of agency deference standards,[166] so it will be analyzed separately and as part of the composite GIP score. The second component of GIP scores is the tenure potential of governors (i.e., governors with longer terms and fewer term limits were more powerful).[167] The third component is the governor's appointment powers (i.e., broader appointment

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[161] *E.g.*, Moore v. Gencorp, Inc., 633 So.2d 1268 (La. 1994); Midtown Medical, LLC v. Dep't. of Health and Hospitals, 135 So.3d 594 (La. 2014).

[162] *See* Stevenson Swanson, *Governors' Power Ranked*, CHI. TRIB., September 2, 2001, http://articles.chicagotribune.com/2001-09-02/news/0109020193_1_governors-veto-power.

[163] Joseph A. Schlesinger, *The Politics of the Executive*, in POLITICS IN THE AMERICAN STATES 210 (Herbert Jacob & Kenneth N. Vines eds., 1965).

[164] *See* Thad L. Beyle & Margaret Ferguson, *Governors and the Executive Branch*, in POLITICS IN THE AMERICAN STATES: A COMPARATIVE ANALYSIS 192, 228 (Virginia Gray & Russell L. Hanson eds., 2008).

[165] *See* Thad L. Beyle, *Governor's Institutional Power 2007*, GUBERNATORIAL POWER (last updated July 2008), https://web.archive.org/web/20131228030443/http://www.unc.edu/~beyle/gubnewpwr.html.

[166] Saiger, *supra* note 2, at 565-66.

[167] *See* Beyle, *supra* note165.

power equals more gubernatorial power).[168] The fourth component is the governor's budget power (i.e., broader budget power equals more gubernatorial power).[169] The fifth component is the governor's veto power (i.e., broader veto power equals more gubernatorial power).[170] The final component is gubernatorial party control (i.e., the governor's party being in control of one or both houses of the legislature was associated with more gubernatorial power).[171] Although gubernatorial party control would have to be considered the most fluid of the six factors mentioned, state electorates tend to show considerable stability over the short and intermediate term.[172] For example, between 2000 and 2010, only eight states showed a change in party control of both houses of the state legislature).[173]

Scores on each of these subscales ranged from 1 (indicating less relative power) to 5 (indicating greater relative power) and yielded potential totals of 6 to 30 for the overall GIP scores. Analyses conducted in 2007 indicated a range from 15 (Vermont) to 25.5 (Massachusetts), M = 20.78, SD = 2.51.[174] An inverse relationship between GIP scores and the strength of agency deference standards was predicted, because interpretative power could be used by courts as a counterweight to already powerful governors.[175]

In addition, executive bundling (the degree to which governors served with appointed, rather than separately elected, executive officials) was predicted to show an inverse relationship with the strength of agency deference standards.[176] The mean for this variable was 2.83 (SD = 1.24).

2. *Judicial accountability*

The American Judicature Society ("AJS") identified the manner by which state supreme court justices in the United States are selected (e.g., merit selection, gubernatorial appointment, legislative appointment, non-

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[168] *See id.*

[169] *See id.*

[170] *See id.*

[171] *See id.*

[172] *See* United States Census Bureau, *Composition of State Legislatures by Political Party Affiliation*, the 2012 Statistical Abstract (last modified May 28, 2012), https://web.archive.org/web/20150906085239/https://www.census.gov/compendia/statab/cats/elections/gubernatorial_and_state_legislatures.html.

[173] *See id.*

[174] *See* Beyle, *supra* note 165.

[175] *See id.*

[176] *See* Saiger, *supra* note 2, at 565-66.

partisan election, or partisan election).[177] They identified: twenty-five states that used a merit selection process; thirteen states that used non-partisan elections; nine states that used partisan elections; two states that used gubernatorial appointments; and two states that use legislative appointments.[178] Some of the categories were so small, however, that a proper data analysis of those categories was not possible. For example, gubernatorial appointments would be a category of particular interest in this study, but because only California and New Jersey select their supreme court justices in that manner,[179] there is an insufficient sample size to determine the impact of that selection method. This, coupled with recent evidence that the method of judicial selection does not predict state supreme courts' rulings for agencies,[180] indicates that this may not serve as a fruitful factor for analysis.

Fortunately, the AJS also provided the length of a state supreme court justice's initial term of office.[181] The justices in forty-six out of forty-nine states (not counting Louisiana, which has already been removed from the analysis) had terms limited to a number of years. The longest term of office in regard to years was fourteen years (New York).[182]State supreme court justices in New Hampshire, Massachusetts, and Rhode Island, however, had no set terms or term limits; Massachusetts and New Hampshire allowed their state supreme court justices to serve until age seventy, and Rhode Island allowed supreme court justices to serve life terms.[183] Although we might consider an appointment to "age seventy" to be longer than a term of 14 years, and an appointment of "life" to be greater than "age 70," this is not necessarily the case, especially because some states have mandatory retirement ages as well (e.g., New Jersey).[184] More importantly for the purpose of constructing a predictor variable, these distinctions do not follow the same consistent time intervals that the other forty-six state court appointments follow. For these reasons, New Hampshire, Massachusetts, and Rhode Island were also excluded from the analysis (in addition to the aforementioned Louisiana).

For the forty-six states used in this analysis, the mean score for this variable was 6.17 (SD = 3.67). Judicial term length is associated with less

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177 *Judicial Selection*, *supra* note 54.
178 *Id.*
179 *Id.*
180 *See* Johnson, *supra* note 58, at 153.
181 *Judicial Selection*, *supra* note 54.
182 *Id.*
183 *Id.*
184 *Id.*

judicial accountability, and for this reason, should show an inverse relationship with the strength of the agency deference standard.[185]

3. *Legislative delegation*

Rossi categorized states in terms of their nondelegation policies into three categories: weak nondelegation states;[186] strong nondelegation states;[187] and moderate nondelegation states.[188] It is expected that moderate nondelegation states would be more likely to adopt the *Chevron* standard than the other two groups.[189] This variable was analyzed separately to see whether these categories performed as expected. For ease in interpretation of the results, however, the groups were categorized as "moderate nondelegation states" (coded as "1") and "other states" (coded as "2") when loaded into the linear regression. Using this coding system, twenty-one states were identified as "moderate nondelegation states" and twenty-five were identified as "other states."

C. *Results*

Correlational analyses were conducted for the four predictor variables and Deference Standards. Results are presented in Table 1.

Table 1. Correlations among Variables of Interest

		1	2	3	4	5
1.	GIP Scores	1.00				
2.	Executive Bundling	.68**	1.00			
3.	Judicial Term Length	.07	-.03	1.00		
4.	Legislative Delegation	-.15	.19	-.15	1.00	
5.	Deference Standards	.34*	.06	.03	-.34*	1.00

*$p < .05$, **$p < .01$

[185] Hudson, *supra* note 5, at 373-74.
[186] *See* Rossi, *supra* note 70, at 1191.
[187] *See id.* at 1193-95.
[188] *See id.* at 1198.
[189] *See* Saiger, *supra* note 2, at 569.

As Table 1 indicates, GIP scores and Legislative Delegation are both significantly correlated with Deference Standards to the $p < .05$ level (i.e., there was a less than five percent probability that the relationships between the predictor variables and the outcome variable were due to chance).[190] Judicial Term Length and Executive Bundling did not significantly correlate with Deference Standards.

A linear regression was conducted using Deference Standards as the dependent variable and Judicial Term Length, GIP scores, and Legislative Delegation as predictors.[191] Executive Bundling was not included in this analysis because it already showed a non-significant relationship with Deference Standards and because, as a component of the GIP scores, it showed a high correlation with that predictor variable. The overall regression was statistically significant to the $p < .05$ level, $F(3, 42) = 3.50$, $p = .02$. In terms of the individual factors, GIP scores significantly predicted Deference Standards, $t(42) = 2.13$, $\beta = .30$, $p = .04$, such that gubernatorial power was inversely related to deference strength. Legislative Delegation also predicted Deference Standards, $t(42) = -2.11$, $\beta = -.30$, $p = .04$, "moderate nondelegation states" were more likely to have strong agency deference than "other states." Judicial Term Length was not a significant predictor of the Deference Standards variable, $p = .79$.

1. Further analysis of gubernatorial power

The GIP scores variable was a composite variable comprised of six distinct variables: executive bundling, tenure potential, appointment power, budget power, veto power, and party control.[192] Another pair of analyses was conducted to see which of these factors were most responsible for the ability of GIP scores to significantly predict deference standards at the state level. First, a correlational analysis was conducted to determine each variable's independent relationship with deference standards. Then, a regression analysis was conducted using all six variables as predictors. This was done to assess the relative strength of each variable when all variables were simultaneously accounted for. With six predictor variables

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[190] *See* FREDERICK J. GRAVETTER & LARRY B. WALLNAU, ESSENTIALS OF STATISTICS FOR THE BEHAVIORAL SCIENCES 213 (7th ed. 2009) ("When there is no treatment effect, an alpha level of .05 means that there is a 5% risk, or a 1-in-20 probability, of rejecting the null hypothesis and committing a Type I error.").

[191] *See* ROSENTHAL & ROSNOW, *supra* note 146, at 558 ("[I]n describing the results of a regression analysis, statements about which predictors are most, least, second-most, etc., important depend not only on the peculiarities of the particular sample being studied, but on the precise battery of predictors that are being employed as well.").

[192] *See* Beyle, *supra* note 165.

and a sample size of only forty-six states, this analysis would have low statistical power, and it was not expected that any of the predictors would actually achieve statistical significance to the $p < .05$ level.[193] The results of the correlation analysis are reported in Table 2.

Table 2. Correlations among GIP Score Subscales and Deference Standards.

	1	2	3	4	5	6	7
1. Executive Bundling	1.00						
2. Tenure Potential	.11	1.00					
3. Appointment Power	.32*	-.22	1.00				
4. Budget Power	.29†	-.03	.30*	1.00			
5. Veto Power	.03	.37*	-.20	.05	1.00		
6. Party Control	-.08	.24	-.17	.02	.00	1.00	
7. Deference Standards	.06	.28†	.06	.22	.27†	.18	1.00

†$p < .10$, *$p < .05$

None of the predictors showed a statistically significant relationship (i.e., $p < .05$) to Deference Standards.[194] Both Tenure Potential and Veto Power approached significance (i.e., $p < .10$); however, longer gubernatorial terms, fewer gubernatorial term limits, and greater gubernatorial veto power were associated with less willingness by the state supreme courts to defer to agencies in matters of statutory interpretation.

A linear regression was conducted using the six components of GIP scores as predictors and Deference Standards as the outcome variables. As expected, given the large number of predictors and small sample size, none of the predictors achieved statistical significance. Consistent with the correlational analysis, however, Veto Power was the most powerful predictor, $t(45) = 1.31, p = .20$, followed by Tenure Potential, $t(45) = 1.23$, $p = .23$. While not statistically significant, these results imply that, while broadly speaking, greater gubernatorial power predicts less judicial

[193] GRAVETTER & WALLNAU, *supra* note 190, at 237 ("Because power is directly related to sample size, one of the primary reasons for computing power is to determine what sample size is necessary to achieve a reasonable probability for a successful research study.").

[194] *Id.* at 215.

deference to agency determinations, that effect specifically appears to be driven by the governor's ability to stay in office and veto legislation.

2. *Further analysis of legislative delegation*

The Legislative Delegation variable was expected to have a curvilinear relationship to the Deference Standards variable (i.e., "moderate nondelegation states" were expected to disproportionately adopt the *Chevron* standard, compared to "weak" and "strong nondelegation states").[195] For this reason, the Legislative Delegation variable was collapsed into two categories: "moderate nondelegation states" and "other states." To establish evidence of this curvilinear relationship, the states were again separated into three categories.

Table 3 shows the expected pattern. Of the forty-six states examined in this study, over half (52%) of the moderate nondelegation states have adopted the *Chevron* standard, while only one third (33%) of strong nondelegation states did the same. Not a single weak nondelegation state that was examined in this study has adopted the *Chevron* standard. In addition, moderate nondelegation states only accounted for three of the thirteen states that adopted a *de novo* standard.

Table 3: Legislative Nondelegation-Deference Cross Tabulation

	Deference Standards			
Legislative Nondelegation	*Chevron*	Some Deference	De novo	Total
Weak Nondelegation	0	3	4	7
Moderate Nondelegation	11	7	3	21
Strong Nondelegation	6	6	6	18
Total	17	16	13	46

3. *Judicial selection method*

Another variable that was unfit for a linear regression analysis was Judicial Selection Method. As with the Judicial Term Length variable, it was predicted that with greater accountability to voters, there would be less need to adhere to the *Chevron* standard.[196] Thus, judges who had been

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[195] *See* Saiger, *supra* note 2, at 569.

[196] Hudson, *supra* note 5, at 373-374.

voted into office would have the most accountability. According to Table 4, however, no clear pattern emerges based on the method of selection. States using a merit system have adopted the *Chevron* standard the most times, but it is by far the largest category overall. These states are statistically more prone to adopt a *de novo* standard.

Table 4: Judicial Selection Method-Deference Cross Tabulation

	Deference Standards			
Judicial Selection Method	*Chevron*	Some Deference	de novo	Total
Merit	9	4	8	21
Gubernatorial Appointment	0	1	1	2
Legislative Appointment	1	0	1	2
Nonpartisan Election	3	8	2	13
Partisan Election	4	3	1	8
Total	17	16	13	46

Even if one were to collapse the two appointment categories together and the two election categories together, there would be little difference between groups: *Chevron* has been adopted by nine of twenty-one (43%) states that use a merit system for judicial appointments and by seven of twenty-one (33%) states who elect their judges. To determine whether this difference reached statistical significance, a chi-square analysis was conducted. This analysis is appropriate because a dichotomous variable (*Chevron* versus non-*Chevron* states) was being compared across groups (states using the merit system versus states using elections).[197] The result of the chi-square analysis failed to reach statistical significance, χ^2 (1) = .40, p = .53, κ = .10, such that there was an approximately 53% probability that the difference was due to chance. This result would suggest that, although judicial accountability and autonomy are plausible factors in the selection

[197] GRAVETTER & WALLNAU, *supra* note 190, at 522 ("The chi-square test for independence uses the frequency of data from a sample to evaluate the relationship between two variables in a population. Each individual in the sample is classified on both of the two variables, creating a two-dimensional frequency-distribution matrix.").

of deference standards at the state level, there is little statistical data to support that hypothesis.[198]

4. Interaction between gubernatorial power and legislative delegation

The final analysis examines states in the extreme ranges of the significant predictors: moderate nondelegation states with weak governors versus other states with strong governors. For the forty-six states examined in this analysis, the mean GIP score was 20.83. Scores above that value identified the state as having a "strong governor," while scores below that value identified the state as having a "weak governor."

Ten states had both a weak governor and previously were categorized as "moderate nondelegation states." Based on the results of the regression analysis, this set of characteristics should predict whether a state's supreme court would adopt *Chevron* deference. In fact, seven of the ten (70%) did adopt the *Chevron* standard. Of the three states whose courts did not adopt the *Chevron* standard, none of them adopted a *de novo* standard. Conversely, sixteen states had a strong governor and previously were categorized as "other states" (i.e., "strong nondelegation states" and "weak nondelegation states"). Based on the results of the regression analysis, this set of characteristics would predict these states adopting deference standards other than *Chevron*. In fact, only four of the sixteen states (25%) had supreme courts that adopted the *Chevron* standard, compared to seven whose courts adopted a *de novo* standard.

For this statistical comparison, another chi-square analysis was conducted. Once again, this analysis is appropriate because a dichotomous variable (*Chevron* standard versus no *Chevron* standard) is being compared across groups (moderate nondelegation states with weak governors versus other states with strong governors).[199] The chi-square analysis showed a significant effect, χ^2 (1) = 5.11, p = .02, κ = .13, indicating that there was approximately a 2% probability that this difference was due to chance. Thus, the groups of states situated in opposite positions in terms of both gubernatorial power and legislative delegation behaved as predicted.

VI. GENERAL DISCUSSION

The analyses conducted above represents an attempt to determine the factors that predict the deference standard that a state adopts. Several possible factors have been suggested in numerous publications, including

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[198] *See* Johnson, *supra* note 58, at 153.

[199] GRAVETTER & WALLNAU, *supra* note 190, at 522.

executive bundling, judicial autonomy, agency expertise, and legislative nondelegation, but none had been explicitly tested in a quantitative analysis.[200] Despite the relatively small sample size, two of the factors tested in the main analysis, Gubernatorial Power and Legislative Nondelegation, reached statistical significance at the $p < .05$ level.[201] Thus, it seems safe to conclude that Gubernatorial Power and Legislative Nondelegation are demonstrable contributors to a state's decision to adopt specific deference standards. This conclusion was also supported by the significant difference between moderate nondelegation states with weak governors and other states with strong governors in terms of their willingness to adopt the *Chevron* standard.

Gubernatorial Power is a particularly interesting factor because, although it has been used to illustrate the issue of agency deference generally as a struggle between the judicial and executive branch,[202] it is virtually never mentioned as a specific factor, while judicial accountability frequently is.[203]Stated alternatively: when discussing a struggle, it seems odd to only mention the relative strength of one of the strugglers. The data would indicate that, on some level, state judges are aware of the relative strength of their state's executive branch and resist ceding more power to already powerful governors. In particular, the data provided a tentative indication that governors who have the potential to stay in office the longest and have the greatest ability to veto legislation are those whose agencies receive the least deference when it comes to statutory interpretation.

With respect to Legislative Delegation, this factor performed exactly as expected: moderate nondelegation states showed a preference for *Chevron*, unlike weak or strong nondelegation states.[204]In fact, no weak nondelegation state examined chose to adopt the *Chevron* standard, possibly because it was unnecessary (i.e., the legislature could simply delegate interpretation power to an agency if it so desired).[205] Taken

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[200] *See, e.g.*, Saiger, *supra* note 2 (discusses all four factors); Hudson, *supra* note 6 (discusses judicial autonomy and agency expertise); Rossi, *supra* note 72 (discusses judicial autonomy and executive bundling).

[201] *See* ROSENTHAL & ROSNOW, *supra* note 146, at 452-54 (explaining the concept of statistical significance).

[202] *See, e.g.*, Saiger, *supra* note 2, at 560 ("In this sense it rests upon federal separation of powers doctrine. . . .").

[203] *See id.* at 561-62(Saiger discusses the varying degrees of autonomy in state judiciaries and how these are thought to influence administrative deference).

[204] *See id.* at 569(Saiger describes the three categories of legislative delegation that state judiciaries fall into).

[205] *See id.* ("A handful of state courts will bless even agency delegations that contain no substantive restrictions upon agency discretion, so long as procedural safeguards are in place.").

together, this means that the majority of states examined in this study (the seventeen states adopting the *Chevron* standard and the seven weak nondelegation states)[206] have managed to remove a great deal of the judicial review power from their state courts.

Unlike the other two factors loaded into the regression analysis, Judicial Term Length was not significant, and Judicial Selection Method provided no clear pattern of results, indicating that judicial accountability may have been over-emphasized as a factor in predicting agency deference standards at the state level.[207] Having said that, the three states that were excluded from the analyses because of their inability to fit into the variable derived for Judicial Term Length appear to be extreme examples of judicial autonomy (i.e., because they featured either age-based or lifetime appointments).[208] Rhode Island, in particular, is the only state in the country that provides its supreme court justices with lifetime appointments.[209]Without ever facing the pressure of reappointment or re-election, the judiciaries in Massachusetts, New Hampshire, and Rhode Island could experience a brand of autonomy that is categorically different that judges experience in the rest of the country. As a result, the dynamic struggle by which deference standards are decided may be fundamentally different for those states.

Executive Bundling also failed to reach anywhere near statistical significance. Like measures of judicial accountability, the efficacy of this factor may be overestimated in the literature, at least for the vast majority of states.[210] It is interesting that the measure used for Executive Bundling was highly correlated with GIP scores (and contributed one sixth to the GIP score total), and GIP scores were significantly correlated with the Deference Standards variable, yet the Executive Bundling variable bore no significant relationship with the Deference Standards variable.[211] In fact, out of all the subscales of GIP scores, it bore one of the weakest relationships to Deference Standards.[212]

Because of an inability to quantify some variables (e.g., agency competence at the state level) and integrate certain states into the data set (i.e., Louisiana for the Deference Standards variable and three New England states for the Judicial Term Length variable), the primary analysis

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[206] *See supra*tbl.1.

[207] *See* Hudson, *supra* note 5, at 373-74.

[208] *See Judicial Selection*, *supra* note 54.

[209] *See id.*

[210] *See* Saiger, *supra* note 2, at 565-66 (Saiger discusses the varying degrees of bundling in state executive branches and how these are thought to influence administrative deference).

[211] *See supra* tbl.1.

[212] *See supra*tbl.2.

consisted of three predictors (and one additional correlate), using a sample of forty-six states. Such an analysis has inherent limitations and will always leave some questions unanswered. With an absolute maximum sample size of fifty states, that limits the factors that can plausibly be tested in an analysis. Conducting a series of correlational analyses has the potential of producing false positives,[213] while cramming additional factors into a regression analysis with such a limited sample has the potential to separate out the variance to the point that no factors achieve statistical significance.[214] In the future, if some additional factors related to selection of agency deference standards are quantified or proposed, it might be worth analyzing them along with Legislative Delegation and GIP scores, just as it might be worth discarding executive bundling and judicial accountability (as least in regard to how those constructs were quantified in this study).

VII. CONCLUSION

Ultimately, the results of this article support the idea that agency deference standards are used as a tool of political power at the state level. Use of legislative delegation and the *Chevron* standard essentially serve to transfer statutory review power from the judiciary to the executive branch, and, "[i]f there is no review, there's no check."[215] When confronted with powerful governors, however, state supreme courts appear to defend their territory, showing less willingness to defer to agents appointed by that governor when interpreting the law. This could be seen as an example of separation of powers at work, and may have a corollary at the federal level in *U.S. v. Mead Corp.*,[216] where a softening of the deference standard could be seen as one reaction to an increasingly powerful executive branch.[217]

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[213] *See* ROSENTHAL & ROSNOW, *supra* note 146, at 328 ("Generally, the more tests of significance computed on data for which the null hypothesis is true, the more significant results will be obtained, i.e., the more type I errors will be made.").

[214] *See, e.g., id.* at 452-54 ("[O]ne consequence of collinearity is that we may have a large R^2 and yet find none of the regressors to be significant.") (citing LINCOLN E. MOSES, THINK AND EXPLAIN WITH STATISTICS (1986)).

[215] Interview with Simeon R. Acoba, Jr., Retired Justice of the Hawai'i Supreme Court, in Honolulu, Haw. (Feb. 17, 2015).

[216] 533 U.S. 218 (2001).

[217] *See, e.g.*, Robert Dallek, *Power and the Presidency, Kennedy to Obama*, 42 SMITHSONIAN 36 (January 2011), http://www.smithsonianmag.com/history/power-and-the-presidency-from-kennedy-to-obama-75335897/?no-ist ("For the past 50 years, the commander in chief has steadily expanded presidential power, particularly in foreign policy.") (for an example of increasing executive power).

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