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A Simple, Ecologically Rational Rule for Settling Found Property Disputes

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Abstract: Who has property in a found item X, which is contained in Y? The finder of X or the person who has property in Y? The common law says it depends. It depends upon whether the owner of Y knew about X, or whether X was lost or mislaid, or how small the weight of X is relative to Y (as compared to its value), or whether the finder was an employee of the owner of Y, to name just a few. Wilson (2020) hypothesizes that humans universally cognize property as being contained in a thing. A testable implication of the hypothesis reveals a simpler, clearer rule for settling found property disputes in the common law: if A has property in Y and X is in Y, then A has property in X, even if B finds X. Using a 2 x 2 design, I report the results of a three-dimensional virtual world experiment to test how incentivized panels of participants award a found item to one of two actual parties who have an all-or-nothing financial stake in the panel’s decision. The results of the experiment strongly support the hypothesis, even, unexpectedly, under counterfactual conditions.

JEL codes: C92, K11

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1. Introduction

The common law doesn’t clearly spell out who has property in a found item $X$, which is contained in $Y$. When there is a dispute over such an item, the court often awards the item to the finder. But not always. Sometimes the court awards $X$ to the owner of $Y$. The decision hinges on many different matters of fact, such as whether the owner of $Y$ knew about $X$, or whether $X$ is a wild or domesticated animal, or whether $X$ was lost or mislaid, or how small the weight of $X$ is relative to $Y$ (as compared to its value), or whether the finder was an employee of the owner of $Y$, to name a few.

We tend to think that property begins when someone finds a resource lying free for any taker, or as Carol Rose puts it, property originates in a “quintessential moment of chutzpah: the act of establishing individual property for one’s self simply by taking something out of the great commons of unowned resources” (Rose 1994, p. 9). No one seems to have to teach two-year-olds the well-known adage of “finders, keepers;” they instinctively assert it all on their own. Wilson (2020), however, argues property originates elsewhere, not in a moment of chutzpah, but in a moment of creation.

On this account, property began in humans when humans began creating composite tools, something not in the great commons of unowned resources. Only humans create composite tools, a feat of nature which is possible only because humans think in abstract thought. A point hafted to a shaft is more than three pieces of the natural world in close physical proximity. The pieces form a whole that did not previously exist in the great commons of unowned resources. There are not three things, nor merely a sum of three things, but one newly created thing—an abstraction for a whole class of purposeful things called a “spear”. Humans perceive such a creation physically in three dimensions. It has an interior, an exterior, and boundary between the two. But we also perceive it with abstract thoughts, such as something made by someone with self-directed purposes, something that someone goes hunting with, and something that someone calls “mine”.

Tools are also, whether composite or simple, an extension of an organism’s body. We assimilate tools as part of our body so as to feel the world through them. When hammering a nail, our minds organize the sensations such that we feel, not the handle vibrating in our palm, but the hammer striking the nail. Our minds treat the hammer as being a very part of our body. The “I” that is in my body is also in the hammer. What happens when I put down the hammer? Am I still in it? Hypothesis: Yes. Our abstract minds continue to put an abstract idea of ourselves in the tool. This thing is mine. We take the concept “I” in my body and place it in the tool as the concept “mine” (Wilson 2020, p. 119). More specifically, Wilson (2020) hypothesizes that humans universally cognize property as being contained in a thing.

An important feature of such abstract thought is that it is tied to the physical world. What is mine extends from the interior of the tool to its surface, but it does not cross the boundary to the external world. An implication of such abstract thinking is that if the tool physically contains the concept of mine, then where the tool goes in the physical world, so goes the concept of mine with it.
Wilson (2020) conjectures such thinking explains why a certain linguistic convention emerges in English jurisprudence during the sixteenth century. When Sir Edward Coke summarizes *The Case of the Swans* from 1592, he uses the phrase *have property in* eight times, as in “a man hath not absolute property in any thing which is *ferae naturae*, but in those which are *domitae naturae*” (Coke 1600, p. 238). Because such a sentence sounds quaint to us moderns, we are likely to read over the little words in the sentence, specifically, the prepositions, when making sense of it. Why do Coke and others that follow him, including, for example, John Locke, Sir William Blackstone, and Adam Smith, use the phrase *property in Y*? Because, as the conjecture goes, the word *in* reflects and reveals the unconscious principles of how property works in chattels. The property is in the thing. Our minds locate property as being in the thing. Related phrases remain in active modern use. In the property law courses, professors regularly say things like “have title in” or “have the greatest interest in”. The title or greatest interest is in a thing. Where the thing goes, so goes our title or greatest interest in the thing. The point of this is to say that human beings locate property *inside a thing*. We *cognize* property by perceiving the physical world with an abstract quality of property being in a thing and knowing thereby what such containment refers to in ordinary business of life.

Wilson (2020) proposes that thinking about property this way can help us discover a simple, ecologically rational rule for settling found property disputes: If A has property in Y and X is in Y, then A has property in X in Y, even if B finds X. I say that the rule is ecologically rational in the Smith (2003) sense of using

reason—rational reconstruction—to examine the behavior of individuals based on their experience and folk knowledge, who are “naive” in their ability to apply constructivist tools to the decisions they make; to understand the emergent order in human cultures; to discover the possible intelligence embodied in the rules, norms, and institutions of our cultural and biological heritage that are created from human interactions but not by deliberate human design. (p. 470)

This study entails, first, rationally reconstructing from several legal cases “the emergent order” of how people based on their own “experience and folk knowledge” would solve the problem of a found property dispute. The proposed rational reconstruction of a simple rule is then put to an experimental test. Importantly, this article subjects the rule to a test that has the potential reverse the interpretation of a prior experiment.

One reason why the common law is unclear about found property disputes may be that there is no “intelligence embodied in the rules” by which people would solve such disputes from their “cultural and biological heritage.” Judges are thus tasked with articulating, case by case, as best they can, the principles they used for settling each particular found property dispute. In other words, there is no room in the common law to improve the efficiency of the case law. Another reason why the common law is unclear may be that, as the judges follow the windy path of precedent, they fail to see a collective intelligence embodied in how people would solve

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1 The convention’s Latin origins go back at least another 300 years (Wilson 2020, pp. 92-93).

2 See notably, for example, Honoré (1961, p. 107).
such disputes. Perhaps the happenstance order of the specific cases locked the courts into particular decisions and blinded them from seeing a general abstract rule around which to organize subsequent decisions. If that is the reason why the common law is unclear, then there is room to improve the efficiency of settling such disputes. For a clear general rule could be one way to reduce the costs of found property disputes by avoiding litigation from the very beginning.

2. A Selection of Found Property Disputes

Traditional views on the origins of property, e.g., John Locke’s, do not distinguish created objects like tools from naturally occurring things like seashells. Children at a young age, however, distinguish between the two as something they expect or don’t expect to “belong to” someone. When presented with new objects, three-year-old children say that toy trucks and forks to “belong to” someone, but leaves and seashells do not (Neary et al. 2012). Parents do not explicitly teach their children such distinctions about things and ownership. They pick it up all on their own from their observations of the world.

An episode of the British animated children’s show Bing illustrates. The episode “Not Yours” opens with Flop and his preschool charge Bing making a visit to Padgett’s corner shop to purchase some groceries and a snack (Bing 2015). While Flop pays for their comestibles, Bing wanders about and finds a box of lollipops on the far wall. Lured by its sweetness, he picks one up, opens it, and takes a lick. When Flop’s call to leave the store interrupts his enjoyment, Bing slips the treasure into his pocket. Notice what the cartoon teaches and what it assumes about their viewers when Bing takes out the lollipop and begins licking it on their way home:

Flop: Oh, what have you got there, Bing?
Bing: Mmm. A lollipop. It’s strawbry.
Flop: Where did you get that from?
Bing: It’s mine. I found it in the shop.
Flop: Ah, and did we pay for the lollipop?
Bing: Uh, no.
Flop: Oh, well . . . if we didn’t pay for it, I’m afraid it must still belong to Padget.
Bing: Oh, can we keep it?
Flop: Well no, Bing, it’s not yours.
Bing: Why not?
Flop: Well, if you take something without paying for it, that’s not right, is it? It’s called stealing.

It’s natural for children to claim things found in what appears to be the great commons of life as “mine.” What preschoolers need to be taught is that “finders, keepers” does not apply to things inside a grocery store. Created things like lollipops belong to other people; they do not lie free like acorns for any taker. You must give something in order to take a lollipop home with you.

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3 See Wilson (2020, chs. 2 and 6) for more specifics on how this theory of property relates to Locke’s famous labor mixing explanation.
Firstness in property matters in two ways. We put property in things we are the first to grasp in the great commons of unowned resources. Once claimed, we perceive such things with a new abstract feature. It is “Mine!” All the other things in the great commons of life lack such a property. Firstness also matters when we create things not originally in the great commons of unowned resources. Human beings put themselves in their tool creations, which is to also say we put property in the things we create. Our minds cognize property is being located in the things we create.

But what happens when we stumble across something created, something that we recognize as not naturally occurring in the great commons? We learn at a young age—like Bing learns from his mentor Flop—that such things generally “belong to” someone else. Someone put themselves into their creation, and at the quintessential moment of creation it was no longer a point, shaft, and some haft.

The puzzle for found items is, why does a created thing which someone generally calls “Mine!” appear to be in the great commons and not inside Padgett’s shop? Created things, by and large, are found inside containers that someone also calls “Mine!” (That’s not right, is it? It’s called stealing.) But if there is no container which someone has property in, and if there is no person around to claim the created good as “Mine!” our minds reclassify the object as lying free for any taker. “Finders, keepers”—first in hand—once again applies.

Firstness thus matters for a found item X, but not priorly so. The prior test is whether someone has property in the container Y in which X is found. Firstness matters only when no one has property in Y which contains X. In such cases first in hand or the creation of X is decisive. But if someone has property in Y, then that person has property in X in Y, even if someone else found X. Several well-known and a few lesser known property cases explain what I mean and why it does not depend on any other matters of fact. Table 1 chronologically lists the eight cases I discuss below and summarizes the found item X and the Y in which X was found.

<table>
<thead>
<tr>
<th>Case</th>
<th>X</th>
<th>Y</th>
<th>Did someone have property in Y?</th>
<th>If not, who has firstness in X?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armory v. Delamirie (1722)</td>
<td>jewel</td>
<td>unknown</td>
<td>No, Armory (first to grasp)</td>
<td></td>
</tr>
<tr>
<td>Pierson v. Post (1805)</td>
<td>fox</td>
<td>public beach</td>
<td>No, Pierson (first to grasp)</td>
<td></td>
</tr>
<tr>
<td>Bridges v. Hawkesworth (1851)†</td>
<td>parcel</td>
<td>shop</td>
<td>Yes, Hawkesworth</td>
<td></td>
</tr>
<tr>
<td>McAvo v. Medina (1866)</td>
<td>pocketbook</td>
<td>barbershop</td>
<td>Yes, McAvo</td>
<td></td>
</tr>
<tr>
<td>Haslem v. Lockwood (1871)</td>
<td>manure in piles</td>
<td>public highway</td>
<td>No, Haslem (first to create)</td>
<td></td>
</tr>
<tr>
<td>Durfee v. Jones (1877)†</td>
<td>$165</td>
<td>safe</td>
<td>Yes, Durfee</td>
<td></td>
</tr>
<tr>
<td>Bowen v. Sullivan (1878)†</td>
<td>two $50 bills</td>
<td>bale in facility</td>
<td>Yes, Bowen</td>
<td></td>
</tr>
<tr>
<td>Jackson v. Steinberg (1949)</td>
<td>several $100 bills</td>
<td>drawer in hotel room</td>
<td>Yes, Steinberg</td>
<td></td>
</tr>
</tbody>
</table>

*Bold indicates who the Court ultimately ruled for.
†Wrongly decided according to the proposed rule

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4 In a short story about two children who sequentially play with a ball, two-year-olds respond to the question “Whose ball is it?” by saying the first child to play with the ball (Friedman and Neary 2008).
Figure 1 summarizes how to determine if someone has property in $X$, which is in a $Y$, for eight property disputes in Table 1. For the 3 cases on the right side of Figure 1, neither disputant has property in the container $Y$ in which $X$ was found. Firstness in creation of grasping of $X$ would thus be the rule for settling the dispute. For the 5 cases on the left of Figure 1, $X$ was found inside a container $Y$ in which someone did have property: a shop, a barbershop, a safe, a bale in a facility, and a drawer in a hotel room. According to the proposed rule, firstness in finding $X$ would not determine who has property in the found item. The disputant who had property in the container $Y$ would have property in the found item $X$.

The three disputes on the right side of Figure 1 all involve an $X$ which was not found in a $Y$ that someone had property in. In the first case, *Amory v. Delamirie* (1722), a chimney sweeper’s boy found a jewel in an unknown location and took it to the defendant to determine what it was. The defendant took out the stone and returned the setting to the boy. The case is traditionally interpreted as the precedent for a right to possess accruing from the fact of possessing (Birks 2000). My interpretation is that a jewel is a created good, something that someone claims property in, and if there is no one around to claim the property in the jewel, nor a container $Y$ to claim the property in $X$ in $Y$, the first to grasp the ring puts their property in it.

*Bold indicates who the final court ruled for.
†Wrongly decided according to the proposed rule.

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5 Armory v. Delamirie, 1 Strange 505 (1722), *The English Reports* (1378–1865) 93.

Electronic copy available at: https://ssrn.com/abstract=3537740
In *Pierson v. Post* (1805), two fox hunters contested who had property in a dead fox. Who has property in a fox on an unowned beach? Post, who had been tracking the fox, had also put a bullet in it, but had not yet secured the prey, or Pierson, who knew Post was pursuing the fox but was indeed the first to kill the fox and grasp it with his very hands? The justice of the peace awarded the fox to Post on account of Post’s pursuit and the downright un-neighborliness of Pierson to interlope. The New York Supreme Court reversed the decision citing Blackstone, Pufendorf, Grotius, and Justinian I. From time immemorial the custom had been that to claim property in a wild animal a hunter must take its natural liberty by either killing or trapping it.

The Connecticut Supreme Court also overruled a trial court in *Haslem v. Lockwood* (1871). In this case Haslem and his employees raked eighteen piles of horse manure to the side of a public highway. With night approaching, they left the piles intending to return the next day to haul them away. Lockwood happened to see them the next day and asked a warden if anyone had asked for permission to rake and take the manure. Hearing no one had, Lockwood made haste and by noon had hauled the piles to his fields. This case is traditionally interpreted as a classic example of Locke’s labor mixing theory of property. My interpretation slightly differs. Because manure doesn’t appear in neat piles in the great commons of unowned resources, Haslem had created something, and by doing so Haslem had thereby put property in the piles of manure.

Firstness solves such cases because no one had property in Y in which X was found. We shall see that someone having property in the container Y in which is X found can likewise serve as a clear, ecologically rational rule for solving property disputes. Such a rule, however, is at odds with how courts have several times ruled when taking numerous other factors into consideration to award X to the finder.

When our minds abstractly locate property as inside a thing, the property ends at the boundary between the interior and the exterior of the thing. The mixing is not between our labor and a thing, but between our abstract notion of property and the inside of the physical thing. Notice how the principle of accession in animals neatly conforms. If Jacob has property in a pregnant ewe, then he also has property in the ewe’s lamb before and after its birth. The property in the ewe is likewise in the lamb which grows from inside the ewe.

The same abstract principle for things that procreate can likewise be applied to nonliving things that someone has property in. The plaintiff in *Durfee v. Jones* (1877) bailed a safe to the defendant, Jones, to use while selling on his behalf (see the left side of Figure 1). Jones found $165 inside the wall inside the safe. Who has property in the found money? The finder, Jones, who also had possession of the safe? Or, Durfee, who had property in the safe itself but did not know about the money inside the wall? The Rhode Island Supreme Court ruled, following Armory, that “the general rule undoubtedly is, that the finder of lost property is entitled to it as against all the world except the real owner, and that ordinarily the place where it is found does not make any difference.” But the place does matter, albeit in the negative, in both *Pierson* and *Haslem*. If Post had been hunting foxes on his own land, Pierson, without permission from Post to be there, would not have a case. Lockwood, likewise, could not go onto Haslem’s land to pile and haul away manure. The boundary matters. I might add, moreover, that

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6 *Pierson v. Post*, 3 Cai. R. 175 (New York Supreme Court 1805).
7 *Haslem v. Lockwood*, 37 (Connecticut 1871) 500.
8 *Durfee v. Jones*, 11 (Rhode Island 1877) 588.
the place where the boy found the jewel is conspicuously absent from the court record and decision in *Armory*.

Such a precedent has consequences one year later when *Durfee* serves as the case more nearly in point for *Bowen v. Sullivan* (1878).9 Sixteen-year-old Quinn (Sullivan’s half-sister and guardian) found an envelope from a bale of rags and paper on the floor of a mill owned by Bowen. Inside the envelope were two $50 bills. The Indiana Supreme Court awarded the money to the finder, not Bowen who had property in the bale and in the mill. Why? In *Durfee*, “the purchase was of the safe, not the safe and its contents, the money was not embraced in the purchase,” and so here Bowen did not purchase the bale “embracing” the money in the envelope. Furthermore, even though Bowen did buy a bale of paper and rags, and money is paper, “their existence was unknown when the envelope was purchased, and their weight was so infinitesimally small, compared with their value.” Thus, because he did not know that he was buying two $50 bills, “it is unreasonable,” the court concludes, to propose that Bowen had property in the money in the bale in the mill.

With such presumption in favor of finders, it is not surprising, then, for a chambermaid to claim money she found while at work cleaning a hotel room. “Finders, keepers,” she thought. The decisive fact for the Oregon Supreme Court in *Jackson v. Steinberg* (1949) was not the simple, clear fact that Steinberg had property in the dresser in the room in the hotel where the money was found, but rather that his employee, Jackson, “was simply performing the duties her employment.”10 Jackson counterclaimed the money she found as treasure trove because it was hidden or concealed. In rejecting the treasure trove argument, the court determined that because the money was “concealed carefully under [a] paper lining of [a] dresser drawer in [a] guest room,” the money was not lost to an unknown owner, but rather mislaid. Why this fine distinction matters, every first-year American law student learns, is because of two prior cases—*Bridges v. Hawkesworth* (1851) and *McAvoy v. Medina* (1866)—which set the precedents for all of the cases on the left side of Figure 1.11

In 1847 Bridges found a small parcel of banknotes on the floor of Hawkesworth’s shop as he was leaving. When no one claimed the money, the two contested who could claim property in it. Bridges, the finder, or, Hawkesworth, the person who had property in the shop in which the parcel was found? The original judge awarded the item to Hawkesworth, but Bridges appealed to the Queen’s Bench which both affirmed *Armory* and rejected the reasoning of the “learned judge” as “mistaken in holding that the place in which [the banknotes] were found makes any legal difference.” The Queen’s Bench noted that if Bridges had picked up the parcel outside the shop, by *Armory* Bridges would “clearly” have property in the parcel. So why would a few yards inside the shop matter? Because, I would say, boundaries in general matter to our minds. If outside the boundary clearly matters to the court, then inside the boundary matters too, maybe not legally but cognitively. Otherwise, outside is not outside a thing and inside, not inside a thing.

The boundary of place of business appears to have mattered to the original judge in the American case of *McAvoy v. Medina*. By *Bridges*, the judge was bound to award a wallet on a counter in a barbershop to its finder, McAvoy, and not the proprietor, Medina. But the judge didn’t rule that way.

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10 *Jackson v. Steinberg*, 186 (Oregon 1949) 129.
He noted that whereas in the case of Bridges the parcel appeared to be lost, the pocketbook in this case was not “to be treated as lost property” but rather mislaid in case the original owner returned to proprietor for it. Such a fine distinction, divining the intentions of an unknown person by the mere physical facts of location of the thing, wouldn’t be necessary if courts had used a clear physical boundary to settle such disputes and espoused a simple rule: if A has property in Y, and a found item X is in Y, then A has property in X in Y, even though B found X.

In what follows, Wilson (2020) and I use a three-dimensional virtual world experiment to test how ecologically rational it is for people to follow such a rule for settling found property disputes. Prior work reports the results of three treatment conditions testing this simple rule but leaves untested a crucial fourth treatment condition that would complete a 2 x 2 experimental design. This article reports the results of the crucial fourth treatment condition in the context of the other three to further test the claim that our minds locate property inside a thing. The fourth treatment condition is what Mayo (1996) calls a severe test. It has the power to rule out flaws from inferring the central claim of the prior experiment. The flip side is that the treatment condition can also completely reverse the central conclusions of the prior experiment.

3. Experimental Design

The experimental design is motivated by Durfee v. Jones. Three facts of the case are just too ripe not to model an ex ante test of the theory: (1) A has property in Y, (2) Y is in B’s possession, (3) B finds X literally inside a wall inside of Y. If the participants in the experiment reject the prediction that people say that A has property in X in Y in such a severe test, then there is good cause to reconsider the theory. On the other hand, if the results of the experiment strongly support the prediction, then the aim is to test of the boundaries of the theory by introducing counterfactual conditions to Durfee v. Jones—specifically, B having property in Y holding all else constant—to further establish social scientific causes. If the results are mixed, then the whole design is up for reevaluation.

There are three types of actors in the three-dimensional virtual world: Red, Blue, and Observers. Red and Blue are modeled after Durfee and Jones, respectively. Three Observers view the entire interaction between Red and Blue, and when, without warning, Blue finds X from inside Y they then decide to whom to award X, Red or Blue. Each Observer privately decides to whom X should be awarded knowing that if they are in the majority decision, they will be paid $20 (cash) but $0 if they are in the minority. The beauty contest is meant to model a judge discovering what the community would think is the right decision and not only their own preference for awarding the item.

Figure 2 displays a bird’s eye view of the virtual world. In the baseline condition, Red, under the control of a participant, walks to the bottom right side of the figure to withdraw a box from the dispenser. The avatar then walks over to the sorting station at the top right of the figure. When Red lays down the box, two yellow and one black token roll out. Red’s task is to sort the yellow and black tokens in the bins at the top of the figure. Each yellow token generates $0.50 for Red. The black token is worth nothing. After Red has sorted the tokens, the avatar picks up the box and hands it to Blue, who is under the control of another participant, on the other side of the wall. Blue’s task is to wash the box out of the view of Red on the other side of a further wall over which Red cannot see. Once Blue has washed the box, the avatar delivers the box to the robot on the left side of the screen. The robot asks whether the box is clean and ready for recycling. Blue must click “Yes” before the robot takes the box and pays Blue...
Figure 2. Bird’s Eye View of the Three-Dimensional Virtual World
$2.00 for the box. Blue can keep $1.50 of the $2.00 and gives the remaining $0.50 to Red to complete the round. Notice that both avatars have something to do and that at the end of the round each person has earned $1.50.

This scene is repeated a total of five times. On the sixth round, everything proceeds as before until Blue gives the box to the robot. The robot in this last round lays the box on the table and a purple token rolls out from inside. The robot says, “Blue, there was a purple token in the box. It has a cash value of $25.00. Is it yours, or is it Red’s?” Blue must either click “Yes, it is mine” or “No, it is Red’s.” After Blue decides, the robot takes the purple token over to Red and asks whether it is theirs or Blue’s. Red then makes an analogous decision.

Up until this point, the Observers watching everything that happens. They then receive the following instructions:

There was a purple token in the box.

Red says it is theirs/Blue’s.
Blue says it is theirs/Red’s.

Your task is to decide whether the purple token is Red’s or Blue’s. You will be paid $20.00 only if at least one of the other two observers agrees with you. Otherwise, you will receive $0 if you are in the minority.

The majority of observers will decide who actually gets the purple token (and its cash value of $25.00).

The Observers’ decision is final, and notice, they do not know what the parties claim when they make their decision. By design, we will be able to see how many Red-Blue pairs actually have conflicting claims, and even for those pairs who may not be in conflict, the Observers are still deciding behind a veil of ignorance who gets the purple token (for real salient cash). The interested reader can view a video demonstration of the experiment here: https://www.youtube.com/watch?v=wo0yreinUDQ.

In the baseline condition, the instructions refer to the box as “Red’s box.” I will refer to this baseline treatment condition as the “Red’s box-Red first grasps the box” condition. The prediction is that the Observers award the purple token to Red even though Blue finds the purple token while the box is in Blue’s possession.

In the next treatment condition, the entire experiment proceeds in the same way except that the instructions refer to the box as “Blue’s box.” This condition is called the “Blue’s box-Red first grasps the box” condition. The prediction is that the Observers award the purple token to Blue because Blue has property in the box.

The third condition is the “Blue’s box-Blue first grasps the box” condition. In this treatment condition, Blue first grasps the box from the dispenser and then washes it before Red sorts the tokens. Red then gives the box back to Blue to sell to the robot. Blue is thus the owner of the box and is in the possession of the box when he finds the purple token. The prediction here is that the Observers award the purple token to Blue because Blue has property in the box, possession of the box, and finds the purple token in the box.
The fourth condition not conducted by Wilson (2020) completes the 2 x 2 design and is called the “Red’s box-Blue first grasps the box” condition. Without this condition it is unknown whether the first-to-grasp effect primarily explains how panels award the found item in this experiment and thus supports the proposed rule for settling found property disputes. Or, maybe the interaction effects of what Red and Blue do severely qualify the first-to-grasp effect so as to call the proposed rule into question. Or maybe the first-to-grasp effect robustly explains how panels award the found item, but that interaction effects for what Red and Blue do also matter in a minority of panel decisions. Figure 3 summarizes the complete 2 x 2 design.

<table>
<thead>
<tr>
<th>Who first grasps the box from the dispenser?</th>
<th>Who do the instructions say has property in the box?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Red</td>
</tr>
<tr>
<td>40 groups September 2017</td>
<td>20 groups February 2018</td>
</tr>
<tr>
<td>Red</td>
<td>Blue</td>
</tr>
<tr>
<td>20 groups October 2019</td>
<td>20 groups September 2018</td>
</tr>
</tbody>
</table>

Figure 3. 2 x 2 Experimental Design

The participants for the experiment were recruited from the general undergraduate student body of Chapman University. They had all participated in one prior experiment of some kind, but no subject participated in this experiment more than once. A session consisted of ten people, five men and five women, who were randomly seated in a computer laboratory to generate two groups of five people. I conducted twenty independent groups of five people for one treatment condition. Wilson (2020) conducted forty independent groups of five people for the first treatment condition and twenty independent groups of five people for two other treatment conditions. The total number participants is 500 (= 100 + 400).

Each participant received $7 for showing up on time, plus what they earned in the experiment. Observers earned either $20 or $0 in additional money. Reds (Blues) earned either $33.50 ($7.50) or $8.50 ($32.50), depending on to whom the Observer panel awarded the purple token. The participants read self-paced instructions and were free to ask questions at any time. The experiment lasted for approximately twenty to twenty-five minutes of the one hour for which they were recruited.

4. Results

Figure 4 reports the results for the three prior treatment conditions when both Red and Blue claim the purple token from inside the box. Each observation is the majority decision of a three-person Observer panel. Out of the 40 Red-Blue pairs in the “Red’s box-Red first grasps the box” treatment condition, 26 of them conflicted, and of those 26 conflicts, the Observer panels award the purple token
to Red 20 times. Such a finding is quite agreeable to the prediction ($z = 2.65$, $p$-value = 0.0041, one proportion, one-tailed test [$p_0 = 0.5$]). The court’s decision in *Durfee* runs counter to how a statistically significant supermajority of people think about the settling the dispute.

![Diagram](https://ssrn.com/abstract=3537740)

**Figure 4. To Whom do the Observer Panels Award the Purple Token When Both Red and Blue Claim It?**

The finding for the “Blue’s box-Red first grasps the box” treatment condition, however, is not agreeable, if the prediction is that because Blue has property in the box, Blue then has property in the purple token found in the box. Seven of the ten Observer panels award the purple token to Red, a mere seven percentage points less than the prior treatment condition ($z = 0.43$, $p$-value = 0.3336, two proportions, one-tailed test). The Observers appear to not take the experimenter’s word that the box is Blue’s.

For that reason Wilson (2020) conducted the “Blue’s box-Blue first grasps the box” treatment condition. After being confronted with the disconfirming evidence from the “Blue’s box-Red first grasps the box” treatment condition, he hypothesized that the Observers were not following the prompt in the initial treatment’s instructions that the box was Red’s. Now the critic might say that this means that the experiment failed to test the treatment that it was designed to test, and thus the experiment is a failure. Such a conclusion, however, would cut our learning short, for it fails to ask why the participants did what they did. It would ignore what the participants in the “Blue’s box-Red first grasps the box” are trying to

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12 DeScioli and Karpoff (2015) pay 59 volunteers 20 cents to read a summary of the *Durfee v. Jones* case and decide who should have received the money found in the safe. They find that 47 of them (80%) side with *Durfee*.

13 Wilson (2020, ch. 8) reports that a small change in the experiment text for half of the 40 pairs has no effect on the results. Figure 4(a) pools the results as one bar.
tell to us. We learn as much, if not more from our failures in the laboratory, than our successes. Such is one value of randomly assigning participants to experimental conditions. Social scientists build laboratory models of the world, to paraphrase Ludwig Wittgenstein, to work on ourselves, our interpretations, our way of seeing things, our expectations of the participants. It is when our participants disabuse us of our predictions that we are invited to see the world differently and learn something new.

In working through our incorrect expectations of the world in this experiment, we face what is known as the Duhem-Quine problem. Because the empirical evaluation of the hypothesis is a composite test of several auxiliary assumptions or hypotheses, does the disconfirming evidence testify against the hypothesis itself or against some assumption in this specific implementation of the empirical test? The results of the first two treatments may seem to point to the latter, but we don’t know unless we conduct another two treatment conditions deliberately designed to isolate the source of the disconfirming evidence in the “Blue’s box-Red first grasps the box” treatment.

To design new treatment conditions we need to ask the question, what could Red be doing such that the Observers think that Red is the owner of the box? By design Red does just three things: pull a box from the dispenser, sort the tokens in it, and hand the box over to Blue. One hypothesis is that, by the theory in the introduction, the Observers treat Red as the owner of the box because Red is the first person to grasp the object from the dispenser.

To test that hypothesis directly, Wilson (2020) conducted the “Blue’s box-Blue first grasps the box” treatment condition, and voilà! 100% of the panels award the purple token to Blue. The switch is from 70% for Red in the “Blue’s box-Red first grasps the box” treatment condition to 100% for Blue in the “Blue’s box-Blue first grasps the box” treatment condition ($z = 3.28, p$-value = 0.0005, two proportions, one-tailed test). The evidence is strongly convincing that whoever has property in Y, also has property in X in Y. The proviso to the finding is that the Observers don’t take the experimenter’s word for who has property in Y. Whoever first grasps Y is the person who has property in Y and therefore property in X which was found in Y.

But a crucial question remains to sort out the disconfirming evidence from “Blue’s box-Red first grasps the box” treatment. What happens in the fourth case (the missing bottom-left cell in Figure 4) when the instructions say that the box is Red’s, but Blue first grasps it from the dispenser? We do not know what happens when we move from “Red’s box-Red first grasps the box” in Figure 4(a) to “Red’s box-Blue first grasps the box”.

We can imagine three types of results and two very different conclusions from completing the 2 x 2 experimental design:

Case (1): Comparing the top-right and the bottom-right cells in Figure 4, the avatar who is first to grasp the box explains the 70-percentage point swing from 30% Blue to 100% Blue (“Blue’s box-Red first grasps the box” to “Blue’s box-Blue first grasps the box”). If this is likewise true for the left two cells in Figure 4, then we could expect a 70-percentage point swing from “Red’s box-Red first grasps the box” to “Red’s box-Blue first grasps the box”, or a final split of 7% for Red and 93% for Blue by the Observers in the “Red’s box-Blue first grasps the box” treatment condition. In short, we could find that the first-to-

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The grasp effect is the unconditional primary explanation for how panels award the found item, i.e., there are no interaction effects for what Red and Blue do. For such a conclusion, the panels could decide 77%, 70%, 100%, and 93% of time to award X to the person who has property in Y, with the proviso that the person who has property in Y, according to the panels, is the participant who first grasps Y.

Case (2): Instead of strongly deciding in favor of Blue, the panels could decide strongly in favor of Red; i.e., we could find that the avatar who sorts the tokens (Red) matters except when three conditions are true in “Blue’s box-Blue first grasps the box”: Blue (a) first grasps the box, (b) possesses the box, and (c) finds the purple token. If this is true, then we could expect a small drop, say a 7 -percentage point swing from 77% Red to 70% Red, when moving from “Red’s box-Red first grasps the box” to “Red’s box-Blue first grasp the box” treatment conditions. In other words, the remaining treatment condition looks just like Figure 4(b), a small swing away from Red as compared to panel (a) and a large swing away from Blue as compared to panel (c). In short, the interaction effects are strong, i.e., the first-to-grasp effect is highly conditional on what Red and Blue do. Moreover, we have strong evidence to conclude that the common reason for why the panels award the found item to Red in three of the four treatment conditions is that the proposed rule for settling disputes is wrong. The common feature to all three treatment conditions is that Red sorts the tokens, and so the work that Red does sorting the tokens explains how the panels decided the dispute. The fourth treatment condition thus has the potential to completely reverse the interpretation of the original results.

Case (3): Finally, we could find something in the middle of Cases (1) and (2). As a benchmark, splitting the difference between Case (1) and Case (2) would result in an Observer panel split of 35% for Red and 65% for Blue. Such a result would mean that the first to grasp the box remains key to who has property in the box in all four treatment conditions, but that it also matters some that the experimenter tells the participants that the box is Red’s because Red is the person responsible for sorting the tokens. In short, the first-to-grasp effect is robust, but the interaction effects for what Red and Blue do are not inconsequential. For such a conclusion, the panels could decide 77%, 70%, 100%, and 65% of time to award X to the person who has property in Y, with the proviso that the person who has property in Y, according to the panels, is the participant who first grasps Y, but it also matters to a minority of panels that Red, as the sorter of tokens, is named in the instructions as the owner of the box.

Figure 5 reports all of the Observer panel decisions for each of the four possible scenarios. The top-left bar graph, when both Red and Blue claim the purple token, is directly comparable to the three panels as the bottom-left corner in Figure 4. Eleven of the twenty Red-Blue pairs are in conflict about who can say, “The purple token is mine.” The results fall nearly in between Case (1) and Case (2) above. Nearly two-thirds of the Observer panels award the purple token to Blue, but one-third of them award the found item to Red. It matters to some that the instructions say that the box is Red’s because Red is sorting the token. The simultaneous interpretation, given the design of the experiment, is that it takes the trinity of first grasping Y, possession of Y, and finding X in Y to eliminate the minority effect of Red’s work on sorting the tokens [64% for Blue in the top-left panel Figure 5 vs. 100% for Blue in Figure 4(c)].

Like with the three other treatment conditions, approximately half of the pairs are not in conflict (Wilson 2020, ch. 8).

This is consistent with the prior results in which disputes arise 65%, 50%, and 50% of the time.
Even though 64-100% of Observer panels robustly award the found item to the person who has property in the item’s container (provided the person is the first to grasp the box in this experiment), the final treatment condition also demonstrates how teasing out the final 0-36% is a nontrivial task. Possession of Y and finding X jointly matter as the 23% minority in “Red’s box-Red first grasps the box” testifies. But the 36% minority in “Red’s box-Blue first grasps the box” also matters in that the sorting task interacts with the claim in the instructions that the box is Red’s (in a way that the claim in the instructions doesn’t seem to matter in the “Blue’s box-Red first grasps the box” treatment condition).

There is no minority in the “Blue’s box-Blue first grasps the box”. 100% of the panels award the purple token to Blue. In the “Red’s box-Red first grasps the box,” however, 77%, not 100%, of the panels award the purple token to Red. Since in both treatments the same agent who owns the box is the person who grasps it first, the difference in results for the two treatments seems to indicate the effect of awarding the purple to token to the finder, which is always Blue. The finder matters to one out of four three-judge panels.

5. Conclusions

The final treatment condition of the 2 x 2 experimental design is crucial for understanding the entire experiment, for it has the power to either rule in or rule out the main hypothesis. The final treatment also demonstrates the complexity of the problem, even in a stylized, controlled experiment while simultaneously demonstrating the strength of the proposed rule for settling found property disputes. The simple rule—if A has property in Y, then A has property in X in Y—is indeed ecologically rational in that supermajorities of observers (77%, 70%, 100%, and 64%) follow it in awarding X to A. The broad findings of the experiment indicate that the court’s decision in Durfee v. Jones runs counter to how a large supermajority of people think property should work. One conclusion from an experiment of counterfactual conditions is that the windy road of precedent in the common law may have developed in an undesirable direction from the original British cases of Armory and Bridges to the subsequent American cases of McAvoy and Durfee.
The first concern of economics readers is whether the proposed abstract rule incentivizes behavior such that the value generated from finding lost items in the future exceeds the forgone costs of doing so. And the law and economics reader’s first instinct is to say that the rule appears to disincentivize finders from bringing lost items to the light of day, thereby decreasing the chance of returning lost items to their owners. It may be true that we cannot rely on the good hearts of finders to do the right thing and bend over to pick up something on the floor. But there is more at stake than simply bringing lost items back into use. For if the public is unsure on the rule for awarding found items, or worse, if courts articulate rules that run counter to how people actually think about such a problem, there may be more costly disputes like Jackson v. Steinberg to resolve in the future. The mind also matters in the long run. Bowen’s first impulse was to offer Quinn $10 of the $100 in the envelope she found in Bowen’s facility. Paying a reward to finders sounds like a good incentivizing addition to the general rule. It’s also an excellent idea for further research to explore whether more than 70-77% of panels award the item according to the abstract rule when the finder also receives 10% of the value.

References


Appendix

Welcome (page 1)

This is an experiment in the economics of decision making. The instructions are simple, and if you follow them carefully and make good decisions you can earn a considerable amount of money which will be paid to you in CASH at the end of the experiment.

In this experiment people navigate in a 3-D virtual world with a first-person point of view. You can move around the environment by using the arrow keys: ←, →, ↑, and ↓. Hit each key once.

To change your view of the world, move your mouse back to look down and forward to look up. Do this now.

If you have any questions at any point in the instructions, please raise your hand.

Press the “i” key to show and hide the mouse cursor to continue to the next page of instructions.

Player Types (page 2)

There are three types of participants in this experiment: a Red person, a Blue person, and 3 Observers. Everyone will go through the instructions as both a Red person and a Blue person.

Box Dispenser (page 3)

Red’s task is to go to their box dispenser, pick up a box, empty its contents, and redeem the box’s contents for money. Use the arrows to walk up to the box dispenser. When you are close enough, a box will appear in your hands. Slightly move your mouse back to see the box in your hands. Then move your mouse forward to straight ahead.

Press the “i” key to show and hide the mouse cursor to continue to the next page of instructions.

Sorting Station (page 4)

Now walk towards the sorting station table. When you walk up next to the table, you will automatically lay the box down on the table. Tokens will then roll out of the box onto the table.

Sorting Station Continued (page 5)

Look down to see if you are holding a token. If you are not holding a token, walk up to the table to automatically pick up a token.

If you are holding a yellow token, walk over to the yellow token bin and deposit the token in it. Each yellow token that Red deposits generates $0.50 in earnings for Red.

If you are holding a black token, put it in the trash; it is worth nothing. You must deposit the black tokens in the trash chute to advance the experiment.

Even though they are not shown here, a box may contain purple tokens. Each purple token that is deposited in the purple token bin generates $25.00 in earnings.
Once all the tokens have been deposited, go back to the bench and pick up the box.

**Transfer Box** (page 6)

Red will then give their box to Blue on the other side of the wall. Blue’s job is to clean and sell the box for Red. Blue will receive a portion of the proceeds for selling the box and will then return the rest of the proceeds to Red.

**Blue Person** (page 7)

You are now going through the experiment from Blue’s point of view. Your task is to clean Red’s box for them and to sell it for money. Take the box over to the wash station now.

Once the box is clean, take the box over to the cleaned box table to sell it to the computerized robot. The robot will buy the cleaned box from you.

**Money** (page 8)

The robot will put money down on the table. Pick up the money. $0.50 is for Red. Blue can keep $1.50 for cleaning and selling the box for Red. Walk over to Red now to split the money.

**Summary** (page 9)

Red now starts the process over.

In this experiment, you are the Red person [Blue person/an Observer]. Observers will earn money later in the experiment. Their [their/your] task right now is to observe Red and Blue.

[Red and Blue only] To help you get your bearings in the virtual world, the monitor on your right displays a bird’s eye view of your avatar. [Red, however, is blocked from seeing anything on the other side of the wall.]

This is the end of the instructions. If you have any questions, please raise your hand and a monitor will come by to answer them. If you are finished with the instructions, please click the Start button. The instructions will remain on your screen until the experiment begins. We need everyone to click the Start button before we can begin the experiment.