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## **PROPERTY RULES AND DEFENSIVE CONDUCT IN TORT LAW THEORY**

Forthcoming, *Journal of Tort Law* (2011)

Boston University School of Law Working Paper No. 11-09  
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Keith N. Hylton

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## Property Rules and Defensive Conduct in Tort Law Theory

Keith N. Hylton\*

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Abstract: What role does defensive conduct play in a utilitarian theory of tort law? Why are rational (as opposed to instinctive) defensive actions permitted by tort doctrine? To address these questions I will build on the property and liability rules framework. I argue that defensive conduct plays an important role in establishing the justification for and understanding the function of property rules, such as trespass doctrine. I show that when defensive actions are taken into account, property rules are socially preferable to liability rules in low transaction cost settings, because they obviate costly defensive actions. I extend the framework to provide a positive theory of defense-related doctrines in tort law.

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## I. Introduction

Defensive conduct is a relatively unexplored topic in the theory of tort law. Legal theorists have examined breach of duty and invasion questions in detail.<sup>1</sup> The negligence test has generated efforts to understand its moral and utilitarian justifications.<sup>2</sup> Similarly, the law of trespass has generated efforts to understand its function and its goals.<sup>3</sup> Defenses appear as interstitial material in this literature.

I will take a close look at defenses here. There are several questions to consider. What role does defensive conduct play in a utilitarian theory of tort law? What is the connection between defensive conduct and necessity doctrine? Why are rational (as opposed to instinctive) defensive actions permitted by tort doctrine?

To address these questions I will build on the property and liability rules framework of Calabresi and Melamed, because it provides a positive, utilitarian theory of tort doctrine.<sup>4</sup> Property rules prohibit nonconsensual transfers of entitlements,<sup>5</sup> while liability rules require compensation for the injuries caused by such transfers.<sup>6</sup> The sets of activities governed by trespass, nuisance, and negligence rules appear to be consistent with the predictions of the property and liability rules model.<sup>7</sup>

I argue that defensive conduct plays an important role in establishing the justification for property rules, such as trespass doctrine.<sup>8</sup> Under the property and liability rules

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<sup>1</sup> Holmes provided the most comprehensive theoretical assessment of tort law in his survey of the common law, Oliver Wendell Holmes, *The Common Law* (1881). Holmes devoted most of his attention to understanding the law and policies of negligence and of trespass, and said relatively little about the rules regulating defensive conduct, such as necessity doctrine.

<sup>2</sup> On the utilitarian justification for negligence law, see Holmes, *supra* note 1; Richard A. Posner, *A Theory of Negligence*, 1 *Journal of Legal Studies* 29 (1972). On the moral justification, see, e.g., Ernest J. Weinrib, *Understanding Tort Law*, 23 *Val. U. L. Rev.* 485 (1989); Charles Fried, *An Anatomy of Values: Problems of Personal and Social Choice* 137 (1970); George P. Fletcher, *Fairness and Utility in Tort Theory*, 85 *Harv. L. Rev.* 537 (1972); Gregory Keating, *Reasonableness and Rationality in Negligence Theory*, 48 *Stanford Law Review* 311 (1996).

<sup>3</sup> Holmes, *supra* note 1, at 97-102; Calabresi and Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 *Harv. L. Rev.* 1089 (1972).

<sup>4</sup> The property and liability rules framework was set out by Calabresi and Melamed, *supra* note 3. I will treat utilitarian and economic justifications of law as essentially the same, although I am aware that utilitarian and economic theory are distinguishable, see, e.g., Posner, *The Economics of Justice* 48-87 (1981) (discussing differences between economic and utilitarian theory).

<sup>5</sup> Calabresi and Melamed, *supra* note 3, at 1092 (defining the property rule).

<sup>6</sup> *Id.*

<sup>7</sup> See Calabresi and Melamed, *supra* note 3, 1105-1127; Thomas W. Merrill, *Trespass, Nuisance, and the Costs of Determining Property Rights*, 14 *The Journal of Legal Studies* 13 (1985); Keith N. Hylton, *Property Rules and Liability Rules, Once Again*, 2 *Review of Law and Economics* 137, 170-188 (2006); Henry E. Smith, *Property and Property Rules*, 79 *NYU L. Rev.* 1719 (2004).

<sup>8</sup> There has been surprisingly little attention given to the function of defensive conduct within the property rules framework. One exception, focusing on cybertrespass, is Catherine M. Sharkey, *Trespass Torts and Self-Help for an Electronic Age*, 45 *Tulsa Law Review* 101, 103-105 (2010). A more general discussion with implications for defense is provided in Smith, *supra* note 5, and in Henry E. Smith, *Self-Help and the Nature of Property*, 1 *Journal of Law, Economics, and Policy* 69 (2005).

framework, property rules are preferable to liability rules when transaction costs (the costs of bargaining) are low. This proposition has come under attack recently, largely on the ground that property rules are not necessary to encourage bargaining in low transaction cost settings.<sup>9</sup> I show that when defensive actions are taken into account, property rules are (once again) superior to liability rules in low transaction cost settings, because they enhance social welfare by obviating costly defensive actions.

This is an important issue in tort theory because the term “property rule” serves as the categorical label for trespass and functionally similar doctrines. In general, trespass doctrine has governed in low transaction cost settings involving property and, to some degree, bodily integrity.<sup>10</sup> If the theoretical basis for the property rule washes away, then the strongest economic justification for centuries of trespass doctrine also disappears.<sup>11</sup>

In high transaction cost settings, where the liability rule is generally preferable to property rule, defensive conduct has ambiguous implications for social welfare. A defensive action may discourage a wealth-reducing taking, enhancing social welfare, or prevent a wealth-enhancing taking, reducing welfare. Without some way of summing up and comparing positive and negative effects, it is impossible to determine a priori whether defensive conduct enhances welfare.

Because defensive conduct may be socially undesirable in high transaction cost settings, tort law can enhance society’s welfare by regulating it. I argue that this points the way toward a better of understanding of necessity and reasonableness doctrines in tort law.

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<sup>9</sup> Louis Kaplow and Steven Shavell, *Property Rules and Liability Rules: An Economic Analysis*, 109 *Harvard Law Review* 713, 720 (1996). The argument that under low transaction costs parties would bargain to an agreement under either the property rule or the liability rule appears to have been first stated in A. Mitchell Polinsky, *Resolving Nuisance Disputes: The Simple Economics of Injunctive and Damage Remedies*, 32 *Stanford Law Review* 1075, 1076-1080 (1980). However, the Polinsky article focuses on the efficiency implications of remedies rather than incentives and implications for takings. Polinsky does not aim to refute the Calabresi-Melamed framework. The argument that efficient bargaining would be observed under either property or liability rules was also set out in James E. Krier and Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 *N.Y.U. Law Review* 440, 455 (1995). Krier and Schwab suggest serious doubts on the validity of the Calabresi-Melamed framework but stop short of an outright rejection. Kaplow and Shavell apply the same argument as Krier and Schwab when they address the low transaction cost setting; but unlike Krier and Schwab they explicitly reject the Calabresi-Melamed analysis.

<sup>10</sup> In the case of bodily integrity, property rules are often displaced by inalienability rules, which prohibit consensual transfers; see Calabresi and Melamed, *supra* note 3, at 1111-1115. The property/inalienability rule approach observed with respect to physical invasions has not always been the approach taken by the law. Adam Smith’s discussion of the history of punishment describes ancient statutes that required compensation for physical harms. See Adam Smith, *Lectures on Jurisprudence* 117 (R.L. Meek, D.D. Raphael, and P.G. Stein, eds., Glasgow Edition, republished by the Liberty Fund in 1982) (1763).

<sup>11</sup> This does not mean that there are no justifications left for the property rule (or, more specifically, trespass law). One could argue that property rules are superior when the investment effects of takings are especially strong and harmful to welfare. This position in favor of property rules has been advanced in the literature; Jeremy Bentham, *An Introduction to the Principles of Morals and Legislation* 143-52 (J.H. Burns ed., Clarendon Press 1996)(1781); Keith N. Hylton, *Punitive Damages and the Economic Theory of Penalties*, 87 *Geo. L. J.* 421, 435-439 (1998); Kaplow and Shavell, *supra* note 7, at 767-769. These are valid arguments, but they make the case for property rules more difficult, more situation-dependent, and more needful of empirical support.

Necessity doctrine appears for the most part to be useless when examined from the invader's perspective, because the invader must pay for damages to the land possessor whether or not the necessity defense applies.<sup>12</sup> But the necessity defense does affect the consequences of defensive conduct. In the example I consider below, the necessity rule aligns the private and social incentives for defensive conduct.<sup>13</sup> The study of defenses also sheds light on the role of reasonableness doctrine as a regulator of defensive conduct. The property rule and the regulatory doctrines authorize the use of defense and regulate its use. Thus, in addition to providing a stronger defense for the property rule theory, the consideration of defensive conduct suggests a positive theory of necessity and reasonableness doctrines. In addition, the framework here sheds new light on the scope of property rules in the eminent domain setting – specifically, eminent domain is not an example of a liability rule as asserted by Calabresi and Melamed in their original analysis; it is a case in which the property rule shifts to protect the invading party, as in the case of necessity.

I demonstrate that rational defensive conduct within the constraints set by necessity and reasonableness doctrines is socially desirable. The necessity and reasonableness doctrines work together, serving complementary functions, to regulate defensive conduct by possessors. Defensive conduct enhances the security of property and saves resources by substituting defensive conduct for the alternative of costly litigation following a taking.

These arguments are presented below in a model described through a simple numerical example. I use the model to examine the function of property rules and liability rules, and the role of defensive conduct in providing a rationale for the property rule. I then extend the model to examine the regulation of defensive conduct through necessity and reasonableness doctrines.

## II. Theory and Illustration

### A. Some Preliminary Issues

In this part I analyze the welfare consequences of property and liability rules in the context of a simple model described with a numerical illustration. The example is entirely conventional,<sup>14</sup> except in one respect: the inclusion of defensive conduct on the part of the potential victim of a taking.<sup>15</sup>

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<sup>12</sup> *Vincent v. Lake Erie*, 124 N.W. 221 (Minn. 1910).

<sup>13</sup> For a formal examination of the incentive implications of necessity doctrine, see Keith N. Hylton, *The Economics of Necessity* (August 31, 2010). Boston Univ. School of Law Working Paper No. 10-23. Available at SSRN: <http://ssrn.com/abstract=1669213>.

<sup>14</sup> By conventional, I mean that I am staying within the basic assumptions of the Calabresi and Melamed model, although I will extend it. An alternative approach puts a greater weight on information costs, including the costs that courts face in determining compensation, as an important factor in assessing the desirability of property rules or liability rules, see, e.g., Krier and Schwab, *supra* note 7; Smith, *supra* note 5. Smith's argument differs from that of Krier and Schwab. Krier and Schwab note that it is sometimes costly to determine damages, and the costs of determining compensation could make liability rules inferior to property rules even when transaction costs are high. Smith, on the other hand, argues that the costs of

Any analysis of the property and liability rules framework will have to consider the incentives of actors in both high transaction and low transaction cost regimes. As a working definition, I will say that a high transaction cost regime is one in which the cost of bargaining is prohibitive. There is no possibility for a property possessor and someone who expects to invade the property to bargain before the event over the terms under which the property possessor will grant access to the potential invader.

The definition of a low transaction cost regime is a matter of some controversy. If low transaction cost is understood to mean that it is easy for the parties to meet and to bargain, then there are many scenarios that qualify as low-transaction-cost settings that are still difficult for successful bargaining. Consider, for example, the scenario in which an employee bargains with an employer over workplace safety. In one sense, this appears to be a low transaction cost setting because the parties are face-to-face already, and see each other daily at the worksite. Moreover, if the employer is willing to let the employee take time from work to bargain, the parties can bargain for sufficiently long periods to reach agreement on complicated matters. However, even in this type of setting, there may be aspects of the contract about which one party knows more than the other. There may be private information that one party has that the other cannot access. The employer may have private information on the productive value of the employee's time; the employee is likely to have private information on his own capacities or on the safety of the worksite. In light of this, the bargaining process may fail to result in a joint welfare-maximizing agreement even though the parties are facing each other daily.<sup>16</sup>

This difficulty in the definition of the low transaction costs setting has been recognized for a long time, and is alluded to in Calabresi and Melamed's article.<sup>17</sup> Transaction costs in general are separable into the costs of meeting and the costs of information.<sup>18</sup> Calabresi and Melamed excluded informational asymmetry, an implication of information costs, from the low transaction cost category.<sup>19</sup> Other scholars have included informational asymmetry within the low transaction cost category.<sup>20</sup>

I will assume that low transaction costs means, at a minimum, that there are no physical, temporal, or informational obstacles to successful bargaining. The most extreme view of

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delineating boundaries, in the presence of dynamic uncertainty, are so high that property rule protection generally dominates liability rule protection whenever exclusion is effective.

<sup>15</sup> One preliminary question is whether to consider defensive conduct as conduct authorized (or regulated) by the law, or as part of the entitlement protected by the law. I will treat it as conduct privileged or regulated by the law, rather than as part of the basic entitlement. As I will argue later, the necessity rule shifts the privilege of defense to the invading party. This implies that the law does not view defense as part of the basic entitlement that it protects, with either a property or a liability rule.

<sup>16</sup> See, e.g., Keith N. Hylton & Maria O'Brien Hylton, *Rational Decisions and Union Entry*, 34 *Villanova Law Review* 145, 152-159 (1989).

<sup>17</sup> Calabresi and Melamed, *supra* note 3, at 1119.

<sup>18</sup> Keith N. Hylton, *Property Rules and Liability Rules, Once Again*, *supra* note 5, at 141. A similar distinction was made earlier by Carol Rose, see Carol M. Rose, *The Shadow of The Cathedral*, 106 *Yale L.J.* 2175, 2176-77, 2179-80 (1997).

<sup>19</sup> Calabresi and Melamed, *supra* note 3, at 1119.

<sup>20</sup> See, e.g., Kaplow and Shavell, *supra* note 6, at 732-738.

the low transaction cost category treats it as the set of circumstances in which bargaining is always successful,<sup>21</sup> in the sense that the parties always find the agreement that maximizes their joint welfare. This is a circular definition of low transaction costs, because it essentially says that low transaction costs mean that transaction costs are sufficiently low for perfect bargaining to take place. My working definition stops short of this extreme tautological view, but I will consider the implications of the extreme position as well. Indeed, the argument I present below appears to be valid under conditions that get arbitrarily close to the extreme position, which biases the case against property rules. If property rules can be justified under the assumptions I adopt, then they can be equally justified under any other set of non-tautological assumptions.

The definition of a taking should also be a matter of controversy, though this has escaped notice in the literature. A *taking*, as conventionally understood, occurs when the acquiring party transfers to himself some property of the possessor (or owner) without the consent of and without providing any compensation to the possessor.<sup>22</sup> However, in some transactions, the acquiring party may induce the possessor (by threatening a taking) to voluntarily transfer his property for a price that is below the possessor's subjective valuation.<sup>23</sup> If it is a taking for the acquiring party to transfer the property without the possessor's consent at a price of zero, why is it not also a taking for the acquiring party to induce, by the threat of such a zero-price transfer, the voluntary transfer of property at a price that is a fraction of the possessor's subjective evaluation? For example, if the possessor is induced, by the acquirer's threatened actions, to sell land that he values at \$1 million for only \$1, why should we not view this as a taking?

The existing literature on property and liability rules has not attempted to answer this question. One could argue that the definition of a taking is insignificant, and that what really matters is whether the transfer of property is efficient or inefficient. If an owner transfers his \$1 million estate for only \$1, the surplus from the transfer is given almost entirely to the acquiring party, but this has only distributional implications and no efficiency implications. If efficiency is the important distinctive feature, then the mere fact that a transfer is categorized as a taking has no implications for the social desirability of the transfer.

In the analysis below, I will continue to follow the conventional definition of a taking – i.e., a nonconsensual transfer without compensation. Such a transfer will be followed by enforcement efforts by the victim or by the state. Consensual transfers, in contrast, will not be followed by enforcement efforts. However, the difference, from the victim's perspective, between a consensual and a nonconsensual transfer may be slight in some instances.

## B. Illustration

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<sup>21</sup> Kaplow and Shavell adopt this approach to low transaction costs, *id.*, at 732-34.

<sup>22</sup> I use the words possessor and owner interchangeably in the text. I will tend to use the word possessor only because it is the more general description.

<sup>23</sup> Kaplow and Shavell treat such transfers as market transfers. This approach is questioned in Hylton, *Property Rules and Liability Rules, Once Again*, *supra* note 5, at 162.

Assume that there are two types of actors: *possessors* and *acquirers*. Possessors own or possess some object that the acquirer wishes to possess. The acquirer has a choice between purchasing the object from the possessor, in an arms-length negotiated transaction, and taking the object from the possessor.

Assume that the possessor has a bicycle worth \$75 to him, and that there are two types of acquirer: one values the bicycle at \$100 (high-valuing acquirers) and the other type values the bicycle at \$25 (low-valuing acquirers).<sup>24</sup>

The state has a choice with respect to enforcement of possession rights. It can apply a liability rule or a property rule. Either rule can be implemented through *public enforcement* or through *private enforcement*.

Consider, first, the liability rule implemented through public enforcement. Under a public enforcement regime the state would apprehend and impose the liability rule penalty on any acquirer who takes a bicycle. If the cost of apprehending an offender is \$10, the economically optimal penalty would be equal to \$85, which is the sum of the value of the bicycle and the state's enforcement cost. Setting the penalty at \$85 effectively internalizes to the offender all of the costs his conduct imposes on society. If the offender puts a value of \$100 on the bicycle (or any value greater than \$85), he will not be deterred by the \$85 fine. But in this event his theft will enhance society's welfare, since his gain is \$100 and society's loss is \$85.

Under a private enforcement regime the state would permit the victim of a taking to sue for damages. Suppose the victim initiates the claim and the state then determines the outcome through adjudication. The optimal damage award, for deterrence purposes, would require the offending party to pay the victim an amount that compensates for the loss due to the invasion plus the amount the victim spends on lawsuit initiation, and also to compensate the state for its adjudication costs.<sup>25</sup> For example, suppose the total cost of lawsuit initiation and adjudication is \$10, with \$2 borne by the victim and \$8 borne by the state. The optimal damage award would require the offender to pay the victim compensatory damages totaling to \$77 and to reimburse the state for its expenses of \$8.<sup>26</sup> Of course, given that the victim's initiation cost is often unobservable to the offender, an optimal damage award of this type would be difficult to arrange.

Now consider the property rule regime. Under public enforcement the state would simply prohibit takings. In order to deter acquirers from taking bicycles, the state will

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<sup>24</sup> This numerical example is a variation on one I have used before. See Hylton, Property Rules and Liability Rules, Once Again, *supra* note 5, at 147-56.

<sup>25</sup> Obviously, the state could set the fine at some level other than the optimal level. If I compare property and liability rules on the assumption that the state chooses a suboptimal fine level, that obviously would bias the analysis in favor of the property rule.

<sup>26</sup> I mean optimal here in the sense of controlling the conduct of the acquirer – i.e., first-best deterrence. On the distinction between first-best deterrence and socially optimal deterrence, see Keith N. Hylton & Thomas J. Miceli, Should Tort Damages Be Multiplied, 21 *The Journal of Law, Economics and Organization*, 388-416 (2005).

threaten to impose a punishment that makes it undesirable to the acquirer to take a bicycle. Suppose, for example, a high-valuing acquirer contemplates taking a bicycle. Under the property rule implemented through public enforcement, the punishment would be set so high that the acquirer could not possibly gain by taking a bicycle. The state could accomplish this objective by incarcerating the offender for a sufficient period of time, or the state could impose a penalty that would eliminate any gain from the taking.

The property rule can also be implemented through private enforcement. In this regime, the victim of a taking would bring an enforcement action which would result in a penalty that makes it undesirable to the acquirer to attempt to take a bicycle.

In the immediately following parts I will examine the types of transfers that occur between possessors and acquirers. I will identify who takes and who trades, and the conditions under which acquirers will choose to trade rather than take. I will start by considering the high transaction cost setting, and then move to the low transaction cost setting.

### 1. High Transaction Costs

First, consider a setting in which transaction costs are so exorbitant that no acquirer would consider bargaining for a bicycle; bargaining is too expensive and time consuming. Acquirers will obtain bicycles only through taking.

#### *a. Liability Rule*

Under the liability rule, only those acquirers whose valuations are equal to \$100 will take bicycles. The acquirers whose valuations are equal to \$25 will not take bicycles. The reason is that if such an acquirer takes a bicycle, he will have to pay a fine of \$85, which results in a negative return.

Each taking by a high-valuing acquirer delivers a social dividend of \$15 (\$25 less the cost of enforcement \$10). Thus, the liability-rule enforcement policy permits society to reap this dividend on every taking. Society has no interest in permitting takings to occur involving low-valuing acquirers because the gain they receive is less than the monetary loss imposed on the possessors.

If all of the acquirers were low-valuing types, the penalty of \$85 would deter them from taking bicycles. But since the social dividend is negative for any taking involving a low-valuing acquirer, society could just as well accomplish the same outcome with a penalty set at \$1 million. The important point is that society prefers, under this set of conditions, to completely deter takings by low-valuing acquirers.

#### *b. Property Rule*

Consider enforcement under the property rule in the high transaction cost setting. Under the property rule, no acquirers will ever take bicycles. This means that society forfeits

the social dividend that is generated by the takings that occur between high-valuing acquirers and possessors.

It follows that the liability rule is preferable to the property rule if transaction costs are high. Under both rules, no takings occur between low-valuing acquirers and possessors. Takings occur between high-valuing acquirers and possessors only under the liability rule – and these takings enhance society's welfare.

## 2. Low Transaction Costs

Now consider the outcome when transaction costs are low, which means that it is easy for acquirers to approach possessors and bargain for the transfer of a bicycle. To simplify, assume that the transaction cost is zero – that is, that no resources are consumed by the process of bargaining between acquirer and possessor.

If high-valuing acquirers make deals with possessors, those deals will involve the transfer of a bicycle for some price between \$75 and \$100. The surplus to the acquirer will be \$100 minus the price; the surplus to the possessor will be the price minus \$75. The total social surplus in every such transaction will be \$25. Obviously, low-valuing acquirers will never acquire a bicycle through a voluntary bargain. They will offer a bid of \$25 and the possessor will turn it down.

Voluntary transactions are better for society than are takings. If a voluntary transaction takes place, the surplus to society is \$25 – because such a transaction will occur only between possessors and high-valuing acquirers. When a taking occurs, the surplus to society is only \$15, because of the expenditure of resources in the enforcement process.

The standard property-versus-liability rules analysis comes to end roughly here. At this point, it is argued that property rules are superior to liability rules in the low transaction cost setting. The reason is that takings will not occur under the property rule; only voluntary transactions will occur.<sup>27</sup> Takings will occur under the liability rule – indeed, every high-valuing acquirer will take a bicycle when he gets the chance. Since the surplus per transfer is greater under the property rule, and since there is no reason to believe that the number of transfers will be different, the property rule is preferable to the liability rule.

## C. Low Transaction Costs Again: Indifference Argument

The standard conclusion just summarized has been contested recently. Kaplow and Shavell argue that takings will not occur under the liability rule when transaction costs are low, and because of this, there is no basis for preferring the property rule to the

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<sup>27</sup> Calabresi and Melamed, in their informal analysis, start with the suggestion that voluntary transfers are preferable on efficiency grounds, and from there argue that voluntary transactions are not feasible where transaction costs are high. See Calabresi and Melamed, *supra* note 3, at 1996-1106. The implication of their argument is that property rules are generally preferable but are inefficient or infeasible in some settings (specifically, high transaction cost settings).

liability rule in the low transaction cost setting.<sup>28</sup> I will refer to this as the Indifference Proposition.<sup>29</sup>

The reasoning behind the Indifference Proposition runs as follows. Suppose a high-valuing acquirer approaches a possessor in the low transaction cost setting. The high-valuing possessor has a choice to take the possessor's bicycle, resulting in a gain of \$100 and a penalty of \$85, or negotiate to purchase the bicycle. In every such case, a voluntary transaction should be observed, and there will be no takings. The reason is that the possessor will realize that he should not set his price above the level of the penalty under the liability rule. As long as the possessor sets his price below the penalty imposed on the acquirer (offender), a voluntary transaction will occur, because the acquirer will prefer the transaction to the penalty. The possessor also will prefer the transaction to the taking. Hence, there will be no takings.

#### D. Defensive Conduct

The foregoing analysis fails to incorporate defensive conduct, an instinctive part of human behavior. When a taking is attempted, the potential victim will not sit idly and watch. He will try to prevent the taking.

Incorporating defensive conduct in the analysis of property rules and liability rules introduces an option that is available to the possessor in response to a taking. Defensive conduct can be either *rational* or *instinctive*. I will focus on the incentives for rational defensive action here. Such actions could be observed in efforts to protect property or to avoid personal injury: forcefully removing an intruder from your property, or forcefully removing someone else's property from your property, using force or threatening force to repel a trespasser or an attacker.

Possessors have two choices in response to a taking: to act defensively, or to let the taking occur and later initiate an enforcement action. I will assume that a defensive action prevents the taking from occurring.

The defensive action will be chosen under two conditions: the net benefit of the defensive action is positive, and the net benefit of the defensive action is greater than the net benefit of enforcement.

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<sup>28</sup> Kaplow and Shavell, *supra* note 6, at 720.

<sup>29</sup> The term "indifference proposition" was first used by Krier and Schwab, *supra* note 7, at 455 n.49. An early version of the proposition is suggested by Kennedy and Michelman's comparison of the "state of nature" to the regime of private property, see Duncan Kennedy and Frank Michelman, Are Property and Contract Efficient?, 8 Hofstra L. Rev. 711, 720 (1979). Kennedy and Michelman argue that theft would not be observed under low transaction costs – unless the thief valued the property more than the owner. The "unless clause" is unnecessary in their argument. If the thief has a lower valuation, according to Kennedy and Michelman, the owner would pay off the thief to get him to go away. The reason this argument is valid, which Kennedy and Michelman do not note, is because the owner has possession. The same argument implies that the thief would prefer to buy out the owner if the thief has a higher valuation – given that the owner has possession.

In the taking scenario, the net benefit of the defensive action is positive as long as the cost of the defensive action is less than the gain from protecting property. The bicycle is assumed to be worth \$75 to the possessor. Thus, any defensive action that cost less than \$75 will be desirable to the possessor when facing a threatened taking.

As a general matter, the net benefit to the possessor *from enforcement* depends on the type of enforcement regime (public or private).<sup>30</sup> In the public enforcement regime, the state bears all of the enforcement costs. If, in addition, the public enforcement regime is perfectly successful, every enforcement effort will prevent the threatened harm from occurring or safeguard the possessor from any material loss. It follows that if the public enforcement regime is perfectly successful, the possessor ordinarily will not have an incentive to take a defensive action to protect his property. If the possessor's only interest is in protecting the property's value to him, that value will be fully protected through enforcement. Thus, in the event that an acquirer attempts to take his property, the possessor would not defend. He would rather let the state enforce.

If the enforcement is not perfectly successful, then the possessor may have an incentive to act defensively even under public enforcement. The reason is that even though all of the enforcement costs are borne by the state, the possessor will still bear risk from some injury that will not be prevented or substantially mitigated, and the associated costs that this risk would impose on the possessor. Suppose, for example, that the attempted taking is prevented, but the injurer is not apprehended, so that there is a risk that the injurer will return to attempt to take from the possessor again.

Under private enforcement, the possessor bears the cost of initiating enforcement (a lawsuit). If the penalty assessed against the acquirer fully compensates the possessor for the taking, then it will compensate for both the property loss from the taking and the cost of initiating enforcement. However, in this case, the net benefit from defensive action will be zero. Thus, if the state fully compensates the possessor for all of the losses associated with the taking and with enforcement, the possessor will not have an incentive to act defensively.

An alternative approach is to assume that the public enforcement regime is not perfectly successful or that the costs of initiating enforcement are not compensated under the private enforcement regime. This would allow for the existence of chinks in the armor of enforcement. Suppose that in the private enforcement regime the total cost of enforcement initiation to the possessor is unobservable to courts and to the acquirer, and consequently the penalty does not include a portion to compensate for the cost of initiating enforcement. For example, if the possessor initiates enforcement, he will spend \$2 and will receive no compensation for it. The liability rule penalty is assumed to be the optimal level (\$85). The possessor will receive \$75 in compensation, and the acquirer

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<sup>30</sup> I have not incorporated the assumption that the possessor has a hidden subjective valuation that would not be compensated under the liability rule. By not incorporating this assumption, I have biased the analysis in favor of the Indifference Proposition. If I did incorporate the assumption that possessors have unobservable subjective valuations, then the possessor would obviously have an incentive to act defensively under the liability rule in order to protect his subjective valuation.

will pay an additional \$10 to the state. Under these assumptions, defensive actions will be observed in response to a threatened taking. If the acquirer spends \$1 on a defensive action which prevents the taking, he can avoid losing \$2 in initiating enforcement.

A defensive action saves litigation expenses, and also saves the state enforcement expenses. When the possessor chooses to spend \$1 on the defensive action, he avoids the need to spend \$2 later on enforcement. He also saves the state from having to incur expenses on prosecution and administration. In the illustration used previously, a defensive expenditure of \$1 allows society to avoid spending \$10 on enforcement, a net saving of \$9.

#### E. Reconsideration of Outcome under Low Transaction Costs

Now I will consider the implication of defensive actions for the choice between the property and the liability rule. Recall that it was argued (under the Indifference Proposition) that society should be indifferent as between property and liability rules when transaction costs are low. The reason is that takings will not occur under either rule; the parties will always reach an agreement for a voluntary trade rather than allow an inefficient taking to occur.

Consider the low transaction cost setting, and suppose the liability rule is in effect. The high-valuing acquirer approaches a possessor to acquire his bicycle. Under the traditional argument based on Calabresi and Melamed, the high-valuing acquirer takes because he still gains after paying the liability rule penalty. Under the Indifference Proposition, the high valuing acquirer does not take, because both he and the possessor can find a superior arrangement, as between the two of them, relative to taking. The reason that the possessor and acquirer reach an agreement under the Indifference Proposition is because the possessor sets his price at the level of or below the liability rule penalty in order to avoid a taking. That enables both parties to reap the gains from trade, though the possessor may fail to receive as much of the surplus as he would in the absence of a threatened taking.

With defensive actions available, this argument must be modified. Now, when the acquirer approaches the possessor desiring his bicycle, the possessor has three options: enforce through litigation after the taking, bargain, or take a defensive action. The Indifference Proposition indicates that the bargain option is superior to the litigation option, hence the litigation option can be discarded from the analysis. But is the bargain option superior to the defensive option?

If the possessor bargains, his gain will be no greater than \$10, the difference between the liability rule penalty of \$85 and the bicycle's value of \$75. If the possessor takes a defensive action, preventing the taking, his potential gain from a bargain becomes the entire surplus from the transaction, \$25. Clearly, any defensive action that costs less than \$15 will be preferable to bargaining, in the eyes of the possessor.

To simplify, assume that a defensive action which prevents the taking costs the possessor only \$1. Obviously, the possessor will invest the \$1 in the defensive action, and then bargain with the acquirer, setting his price above the \$85 limit associated with the liability rule penalty. The rational strategy for the possessor is to spend \$1 on the defensive action and then set a take-it-or-leave-it price of \$100 for the bicycle. The gain from this strategy, relative to bargaining without taking the defensive action, is \$14 (\$100 price with defense minus \$85 price without defense minus \$1 investment in defense). Given this, all possessors will take the defensive action in the low transaction cost setting.

The upshot of this discussion is that if the cost of the defensive action is sufficiently low, the possessor will invest in defense, and no possessor will be able to take his property. Any acquirer who wants the possessor's property will have to bargain for it. The defensive action serves in effect as a privately-sponsored property rule. Since it requires the expenditure of additional resources, it is inferior in welfare terms to the state-sponsored property rule.

This conclusion is premature, one might argue. Why not let the bargaining continue, encompassing even the question whether to invest in defense? Assuming transaction costs are low, the parties could bargain about whether the possessor will take a defensive action. The acquirer will say to the possessor, "If you spend money on defense, you will have only \$24 of surplus available. If you don't spend money on defense you will have \$25 of surplus if I refrain from taking your property. I could let you have \$24.50 of that surplus if you will let me have \$.50 of it. Why burn money on defense?"

This hypothetical conversation implies that there is a Pareto superior transaction in which the possessor forgoes defense and shares the entire surplus with the acquirer. If transaction costs are low, the parties should choose this arrangement over any alternative in which the possessor takes a costly defensive action. Given this, the defensive action will never be taken under the liability rule and the entire transaction surplus will be shared, just as under the property rule. The liability rule and the property rule would be equivalent in terms of welfare, as predicted by the Indifference Proposition.

But there are problems with this conclusion too. First, a promise on the part of the acquirer to forgo a taking lacks *credibility*. If the possessor disables himself from defending his property, why should the acquirer not renege on his promise and take (or renegotiate the deal) after the possessor has disabled himself? An exchange in which the possessor agrees to forgo defense in exchange for the acquirer's promise not to take requires trust between the parties.<sup>31</sup> Indeed, the slightest degree of mistrust, or lack of common understanding, would generate the mutual defection outcome where the possessor invests in defense and the acquirer attempts a taking. Suppose, for example, that they agree to share the surplus with no investment in defense, and suppose that the possessor thinks that the acquirer thinks that the possessor might actually invest in defense. Then it may be rational for the possessor to invest in defense. If the possessor

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<sup>31</sup> Alternatively, the acquirer could disable himself from engaging in a taking. For example, the acquirer could bind his hands in order to make it impossible for him to take. However, this is a costly action and would reduce the surplus from bargaining just as much as would the defensive investment.

invests in defense, takings will be prevented, but welfare will be dissipated in defensive expenditures.

This implies that the Indifference Proposition needs extremely strong assumptions when defensive conduct is taken into account. In addition to zero transaction costs, the parties must share a sense of *common trust* in each other. The common trust assumption is so strong that it should be viewed as appropriate only for special cases.<sup>32</sup>

The second problem with the conclusion that no defensive expenditures and no takings will occur is that it ignores the possibility that the acquirer can outspend the possessor in the struggle for property – that is, the problem of *ex ante rent dissipation*. If the possessor can block a taking by investing \$1, why shouldn't the acquirer be able to defeat those defenses by spending \$2? Eventually all of the surplus from the transfer will be dissipated in investments into the technologies of taking and defense. And common trust, even if it were plausible, would not necessarily get us out of this worst-case scenario, because each party would have an incentive to invest in order to gain the upper hand before any bargaining begins.

The more plausible view is that in low transaction cost settings, common trust will not exist and the parties will remain sufficiently self-interested that they will invest to gain leverage in the bargaining process. As a result, defensive investments will be observed. In the best-outcome scenario, the parties will bargain over transactions subject to the possessor's freedom to exercise his defensive option.<sup>33</sup>

The conclusion is in one respect the same as that implied by the Indifference Proposition: no takings occur. However, in contrast to the Indifference Proposition, the liability rule is inferior to the property rule when transaction costs are low. The reason is that defensive expenditures are made under the liability rule, while such expenditures are not incurred (because they would not be necessary) under the property rule.

The other key result of taking defensive actions is that takings do not occur in the high transaction cost scenario. If possessors each spend \$1 on defense, takings will be prevented. Property is not transferred from possessors to high-valuing acquirers.

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<sup>32</sup> Admittedly, one could argue that trust is important in most transactions – it is the rare case in which pay and performance are simultaneous. Trust, or some level of compliance with norms requiring promise-keeping, are observed in most functioning markets. Kenneth J. Arrow, Gifts and Exchanges, 1 *Philosophy and Public Affairs* 343, 357-58 (1972). Still, there is a substantial difference between the level of trust that is required in a setting in which the property rule is recognized and enforced, and the level of trust required in the setting in which it is not. The property rule protects a broader range of property interests than does the liability rule. The interests that are effectively unprotected under the liability rule would need to be protected through trust in the one-on-one transaction.

<sup>33</sup> In the worst-outcome scenario, all of the gains from trade will be dissipated as parties invest *ex ante* in order to gain leverage in the bargaining process by securing dominance in the use of force. In this scenario the parties engage in competitive one-upmanship in technologies that facilitate taking and defense. The Coase Theorem has little application to this scenario.

The welfare implications of these changes are unclear a priori. On one hand, it is efficient for the defensive action to substitute for the enforcement effort. Society saves \$9 by each such substitution. On the other hand, and perhaps counter-intuitively, resources are not transferred by takings to high-valuing actors. As a general matter, the welfare implications of defensive actions in the high transaction cost setting are ambiguous.

### III. Application to Law

To this point, I have examined the welfare implications of defensive conduct under property rules and under liability rules. With defensive conduct taken into account, property rules are unambiguously preferable to liability rules in low transaction cost settings. In high transaction cost settings, where liability rules are preferable to property rules, defensive conduct has ambiguous welfare implications.

In this part, I will apply the theory developed in the previous part to the case law on defensive conduct, starting with *Ploof v. Putnam*.<sup>34</sup> Tort law, I will argue, incorporates the property rule, which, in addition to prohibiting nonconsensual transfers, *authorizes defensive conduct*, and complementary regulatory doctrines that *align private and social incentives to take defensive action*. As a result, defensive conduct carried out in accordance with the tort law rules is likely to be socially beneficial. Although the property rules framework indicates that defensive conduct has ambiguous welfare implications generally, the tort law governing defensive conduct discourages the socially harmful forms of it.

#### A. *Ploof v. Putnam*: Necessity Doctrine as Regulator of Defensive Conduct

Consider an example based on *Ploof v. Putnam*. Suppose the boat owner (acquirer) approaches the possessor's dock in his boat and attempts to moor it to the dock. A storm is in progress and the acquirer needs to act quickly to avoid damage to his boat and the people inside of it. The possessor has the option of allowing the acquirer to tie his boat to the dock, and then bring a lawsuit later for any damage caused, or to prevent the acquirer

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<sup>34</sup> 81 Vt. 471, 71 A. 188 (1908).

from tying his boat to the dock.<sup>35</sup> Because of the need to act quickly,<sup>36</sup> the cost of bargaining all the way to an optimal contract is prohibitively high.<sup>37</sup>

It is not clear whether defensive action is socially desirable. It enhances welfare by substituting the cheaper defensive action for litigation. However, it may reduce welfare if the value of the temporary mooring to the acquirer is greater than the cost to the possessor. Specifically, suppose the numerical assumptions I adopted in the illustration examined earlier apply to this case: the cost of defense is \$1 and the total expenses from litigation amount to \$10, with \$2 borne by the possessor (dock owner) and \$8 borne by the acquirer (boat owner). The savings from substituting defensive conduct for litigation amount to \$9. The defense action is welfare enhancing if the difference between the acquirer's gain and the possessor's loss is less than \$9. If the difference is greater than \$9, social welfare is reduced by the defensive action.

Suppose, for example, that the value of temporary mooring is \$100 to the boat owner. Suppose the damage that the boat owner would do the dock is \$20. Table 1 shows the relevant numbers for this example. Since the difference between the boat owner's gain and the dock owner's loss is greater than \$9, social welfare would be reduced by the defensive action. Another way of seeing this is to consider the social costs under the alternatives. If the dock owner defends (turning away the boat) the cost to society is the sum of the costs of defense and the harm to the boat owner, which is \$101. If he chooses not to defend, society will bear the costs of litigation and the loss of the dock owner, which sums to \$30. Under these assumptions, society is better off if the dock owner chooses not to defend.

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<sup>35</sup> In the previous part of the text, I examined a hypothetical case in which the potential acquirer attempts to acquire a bicycle belonging to the possessor. What happens if we apply the same analysis to *Ploof*, assuming transaction costs are sufficiently low for an agreement to be reached? If the boat owner approaches the dock owner and gets permission to tie his boat, it would seem that the issue of defense is no longer important. Granting permission implies forbearance from defense. But what if the boat owner exceeds the terms of his invitation? Defense becomes relevant again, and the issues of credibility and trust explored in the previous part reemerge. Or suppose the boat owner approaches the dock owner a week in advance and proposes to share the surplus from gaining access to the dock as long as the dock owner forgoes all defensive investments? The issues of credibility and trust again emerge as significant constraints on the bargaining process.

<sup>36</sup> If there were no need to act quickly, this scenario would be one in which the acquiring party values access more than the loss to the owner. For such scenarios in the case law, see, e.g., *Jacques v. Steenberg Homes*, 563 N.W.2d 154 (Wis. 1997); *Goulding v. Cook*, 422 Mass. 276 (1996).

<sup>37</sup> If the cost of bargaining were not prohibitively high, there would remain the problem of sorting out fair from unfair bargains. The possessor would realize that the potential invader (boat owner) is in dire straits. He might require the boat owner to pay an enormous fee, equal to the entire value of the boat, for access to the dock. Courts have refused to enforce salvage fees under these conditions, see, e.g., *Post v. Jones*, 60 U.S. (19 How.) 150, 160 (1856); Epstein, *Cases and Materials on Torts* 75 (2008). One important effect of the necessity doctrine is that it removes a great deal of bargaining power from the dock owner during the storm. With the necessity doctrine in force, the boat owner knows that he can sue for the value of the boat. The dock owner's refusal would threaten only the loss of litigation expenses to the boat owner, rather than the loss of the entire value of the boat. The bargaining game between the boat owner and dock owner changes to one in which the parties have roughly equivalent stakes in reaching an agreement.

Table 1  
Numerical Example Based on *Ploof v. Putnam*

	Defense	No Defense
Loss to Possessor	\$1	\$20
Loss to Acquirer	\$100	\$0
Litigation cost of Possessor	\$2*	\$2
Litigation cost of Acquirer	\$8*	\$8

\*Expenses incurred only under the necessity doctrine.

As this example illustrates there are many variables that could affect the welfare accounting of defensive actions. One is whether the possessor can identify the type of acquirer before the transaction. Suppose, consistent with this illustration, the possessor can act early – i.e., invest in defense ex ante – by blocking the boat or defend later by untying the boat. If the possessor can see that the acquirer is a “low value type” (i.e., the value of temporary mooring is low to the acquirer), he need not invest early in defense since the low-valuing acquirer will not try to take his property. Knowing that he will have to pay the liability rule penalty (i.e., damages), the low-valuing acquirer will not attempt a taking. In the *Ploof* setting, this means that if the boat owner has a dilapidated old boat that is virtually worthless, and no lives or other property are in danger, the boat owner will not rationally attempt to tie it to the possessor’s dock in the first place. The possessor will invest in defense only when he observes that the boat owner would rationally place a high value on the temporary mooring.

If the possessor cannot identify the type of acquirer before the transaction is complete, he may choose not to invest early in defense as a general rule. Suppose the vast majority of potential acquirers are low-valuing types. Since they will not attempt a taking, there is no need to invest in defense. Investments in defense will be observed only when the probability of detecting an invasion is low, or the percentage of high-valuing acquirers, irrational acquirers, or judgment-proof acquirers is sufficiently high.<sup>38</sup>

Another variable that might affect the welfare assessment is the variety of defensive actions available. Some defensive actions may be welfare enhancing, even when the acquirer is a high-valuing type. For example, the dock owner may be able to guide the boat into a portion of the dock where it will do less damage. Yet another variable is the size of the transaction cost; in some emergency situations, no one may have time to consider options.

Given the unclear welfare implications of defensive actions, the law has made an effort to channel those actions into socially beneficial directions. Under the necessity defense, the possessor may be held liable to the acquirer for the losses imposed on the acquirer by the possessor’s defensive action. Return to *Ploof v. Putnam*. The plaintiff (acquirer, boat owner) brought a trespass claim against the defendant for preventing him from mooring to the defendant’s dock. The court held that when the defense of necessity applies, the acquirer who attempts a taking (temporary mooring in this case) is not a trespasser. The possessor who defends against the taking is then liable in trespass to the acquirer.

Consider the implications of the necessity doctrine for takings in high transaction cost settings. Suppose, again, that the value to the boat owner of temporary mooring is \$100, and the cost of that mooring to the dock owner is \$20 (as in Table 1). A defensive action by the dock owner costs him \$1 and saves \$10 in litigation expenses by obviating dock owner’s the trespass lawsuit. However, the blocking prevents a mooring that would have

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<sup>38</sup> Suppose the percentage of high-valuing boat owners is low. Dock owners will choose not to invest in early defense (blocking). If the cost of late defense (untying) is greater than that of early defense (blocking), the equilibrium outcome could be one in which more resources are put into each instance of defense because dock owners have adopted the late defense option.

raised aggregate welfare by \$80. Overall, the defensive action reduces social welfare – specifically, the welfare loss from the defensive action is equal to \$71, the difference between the \$9 litigation cost gain for society and the \$80 welfare loss. In spite of this loss in social welfare, the dock owner has an incentive to take the defensive action because it allows him to save \$1 by substituting the defensive action for the cost of litigation. Indeed, as long as the cost of the defensive action is less than the cost of litigation, the dock owner will choose the defensive action.

Now incorporate the necessity defense into the actor's calculations. Because the boat owner is not a trespasser according to the necessity defense, the dock owner will incur a liability to the boat owner and litigation expenses (left side of Table 1) as well if he chooses to defend. A defensive action by the dock owner will lead to liability to the boat owner, plus the cost of defense, plus the cost of litigation. If the causation element is considered carefully, so that the court awards the boat owner the amount he has suffered *in excess* of what he would have paid if the invasion occurred, the amount of liability incurred by the dock owner for taking the defensive action is \$80 (the difference between the \$100 loss to the boat owner and the \$20 that the boat owner would have otherwise paid to the dock owner). The dock owner's total cost from a defensive action is therefore \$83 (\$80 liability, plus \$1 defense cost, plus \$2 litigation cost). The cost of not taking a defensive action and litigating later is equal to \$2 (because the dock owner receives compensation for his \$20 loss and incurs the litigation cost). Given this, the dock owner will not take the defensive action, which is the socially desirable decision under these conditions.

More importantly, under the necessity doctrine, the private incremental cost of a defensive action is the same as the social incremental cost of a defensive action. Excluding litigation costs from the analysis,<sup>39</sup> the private incremental cost of defense (comparing the decision to defend with the decision not to defend) is \$81 (the sum of two terms: (1) the cost of defense and (2) the difference between the boat owner's loss and the dock owner's loss), which is the same as the social incremental cost of defense. This example shows that *the necessity defense aligns the possessor's incentives for defense with the socially optimal incentives for defense.*<sup>40</sup>

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<sup>39</sup> Under the necessity rule, litigation occurs whether or not the dock owner takes a defensive action, so we can exclude litigation costs from the comparison.

<sup>40</sup> For a formal demonstration, see Hylton, *Economics of Necessity*, supra note 8. This example assumes a level of economic accuracy in the application of the causation test that may not be realistic. An alternative, and probably more realistic, approach is to assume the causation test is not applied in the manner assumed in the text. Even under this alternative, the necessity doctrine still aligns the private and social incentive to take a defensive action. Suppose the court does not reduce damages on the basis of the causation argument. Then the dock owner will incur an expense of \$103 if he chooses to defend and \$2 if he chooses not to defend – so he will choose not to defend, which is the socially desirable decision. Now suppose the loss to the boat owner is only \$10. In this case, the court would not apply the necessity doctrine, and the dock owner would not be liable for defending, so again his decision would be best on social welfare grounds. See *id.* The informational requirements of the necessity doctrine are not great because all the court needs to do is determine which party has the entitlement of greatest value, *id.* For a defense of property rules based in part on the theory that they are less informationally demanding than liability rules, see Smith, supra note 7.

The lesson from this analysis is that *with the necessity defense taken into account, defensive action is more likely to be consistent with social welfare in high transaction cost settings. Possessors who take the existence of the necessity defense into account are more likely to take defensive action only when it is welfare enhancing.* Defensive action is desirable overall within the scope of the law.<sup>41</sup>

The necessity defense regulates the use versus nonuse decision regarding defensive acts. If a possessor anticipates that an acquirer will be able to take advantage of the necessity defense, he will forgo the defensive action. In other words, the necessity rule controls the possessor's rational use of the defensive action as would an on-off switch. However, the necessity defense does not regulate the type of defensive action employed.

### B. Reasonable Conduct in the Manner of Defending

In addition to the necessity doctrine, tort law also applies a *reasonableness doctrine* to defensive actions. Under the reasonableness doctrine, the possessor may be held liable for injuries to the acquirer when the defensive action fails to meet the reasonableness requirement. Return to the example based on *Ploof v. Putnam*, and suppose there is no emergency this time. In other words, transaction costs are low; there is ample time for the boat owner to bargain with the dock owner for access to the dock. But the boat owner attempts to moor without seeking permission anyway. The defensive action of the dock owner is permissible, since the necessity defense cannot be used by the boat owner. However, suppose the dock owner, instead of merely deflecting the mooring attempt, uses a grenade to destroy the incoming boat. The deliberate and unnecessary destruction of the acquirer's property goes beyond the action necessary to prevent the taking of property. The dock owner would be held liable for the incremental destruction caused by the grenade under the reasonableness doctrine.

To see the function of the reasonableness doctrine within the example used here, suppose the value of temporary mooring to the acquirer is only \$5. The acquirer probably could not use the necessity defense because of the difference between the cost and benefit of temporary mooring.<sup>42</sup> However, the grenade used to deflect the acquirer's boat causes destruction valued at \$200. The value of the destruction is much greater than that of temporary mooring, because the mooring is temporary while the destruction is

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<sup>41</sup> This argument has implications for the argument of the previous part that property rules are socially preferable to liability rules in low transaction cost settings. If the necessity rule leads to socially optimal defensive expenditures, then in theory the property rule can be replaced by a liability rule coupled with the necessity rule, so that defensive expenditures are made only when the taking is wealth-reducing. Such a regime would optimally regulate defense, but would still result in defensive expenditures. Welfare would therefore be lower than under the property rule.

<sup>42</sup> *Vincent v. Lake Erie*, 124 N.W., at 222 (noting that "the defendant prudently and advisedly availed itself of the plaintiffs' property for the purpose of preserving its own more valuable property"); Francis H. Bohlen, *Incomplete Privilege to Inflict Intentional Invasions of Interests of Property and Personality*, 39 *Harvard Law Review* 307, 314-15 (1926). Vincent does not state explicitly that the necessity doctrine requires the defendant's property that is preserved to be more valuable than the plaintiff's property that is sacrificed. Still, the reference to the relative value of the defendant's property suggests that the court considered this an important factor in finding that the necessity defense applies. Bohlen argues that the necessity defense requires that the defendant's property have greater value than the plaintiff's.

permanent. Suppose the possessor could have deflected the boat without causing destruction at a cost of \$1. The use of the grenade costs \$1 also, but imposes a loss of \$200. If the possessor is held liable for the \$200 destruction under the reasonableness doctrine, he will have an incentive in the future to choose the less destructive method of property defense (deflection rather than destruction).

The reasonableness doctrine's regulation of defensive force generally involves a Hand-Formula like balancing of the costs and benefits of alternatives forms of defensive conduct. In the most commonly repeated scenario, defense of real property, the reasonableness rule has been crystallized in the form of a choreographed set of responses. *M'Ilvoy v. Cockran*<sup>43</sup> and similar cases have set out the following procedure on defending property. If the invasion is forceful, the possessor can use force to expel the intruder. If the invasion is peaceful, the possessor must first request the invader to leave, and then can use force if the invader refuses. The force that is used must be proportional to the force used by the invader and no more than is reasonably suggested by the need to expel the intruder.

In addition to regulating the degree of force used in rational defense, reasonableness doctrine regulates the decision to use force, primarily to distinguish defensive from offensive conduct. In order to be permissible defensive conduct, there must be a reasonable perception of the need to use force in defense. Suppose a shopkeeper has a store customer roughed up by store security guards because he thought the customer had shoplifted an item. A court would require evidence that the shopkeeper had reasonable grounds for believing that the store customer was stealing.<sup>44</sup> If there was no evidence of reasonable grounds for suspicion, the shopkeeper's use of force would be impermissible even if the degree of force used was considered reasonable.

The property rule analysis of the previous part establishes that defensive conduct can be socially desirable, given the delay of public enforcement and the high cost of private enforcement. For this reason it makes sense for the law to permit rational defensive conduct to a certain degree. But once the law immunizes defensive conduct, it creates an incentive for actors to characterize offensive conduct as defensive. For example, returning to the shopkeeper case, the shopkeeper's security guard might decide for private reasons to harass a store customer, perhaps because frequent displays of rough treatment would deter customers from attempting to shoplift. When asked the basis for the harassment, the security guard could argue that he thought the customer was shoplifting. Given the possibility that aggressive assaults could be disguised as defensive actions, there is a need for a rule regulating the decision to use force in defense.

As the shopkeeper example illustrates, defensive conduct may have private benefits that vastly exceed the social benefits in some settings. A shopkeeper might have a preference

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<sup>43</sup> 2 A.K. Marsh, 271 (1820).

<sup>44</sup> In *Coblyn v. Kennedy's*, 359 Mass. 319, 268 N.E. 2d 860 (1971), the store security guards surrounded an elderly man, in front of customers, as he was exiting the store; marched him through the store to question him. The court concluded that the threatened force used and the nature of the detainment went beyond the force necessary for the danger they suspected.

for a certain type of customer, and distaste for another type. The distaste could be rationally based, or based on irrational preferences. In either case, the shopkeeper's incentive may be to harass store visitors who are within the group that he dislikes. Harassment of this sort would discourage the disfavored customers and might even encourage the favored ones. Liability regulates the exercise of defensive force in these settings by internalizing its external costs.

Although rational defensive conduct can be socially desirable, the incentive to use it is excessive. The overall effect of both necessity and reasonableness doctrine is to dampen the excessive incentive to take defensive action and the closely-related incentive to choose the most effective action without regard to its costs to the invading party.

### C. Defensive Conduct for the Protection of Others

Under the reasonableness rule, a possessor who takes a defensive action may not be held liable to the acquirer, as would otherwise be required by the necessity doctrine, if his conduct benefits others. In the hypothetical based on *Ploof*, suppose the dock owner realizes that the incoming boat carries diseased animals that will infect other cattle within the community. If the dock owner deflects the boat, the necessity rule would appear to impose liability on the dock owner. However, he may avoid liability under the reasonable conduct rule. Application of the necessity rule to this setting would distort the incentives of the dock owner in a way that would discourage him from taking the defensive action even though it is socially desirable.

To illustrate, assume the necessity rule applies. The boat is approaching the dock and will impose a cost of \$20 on the dock owner, and the value of temporary mooring to the boat owner is \$100. But in this case, temporary mooring will lead to the spread of disease to other cattle in the community, resulting in a loss of \$1,000. Again, the dock owner realizes that if he takes a defensive action he saves \$1 (he spends \$1 on defense and saves \$2 in litigation costs). Because the boat owner is not a trespasser in the law, according to the necessity defense, the dock owner incurs a liability to the acquirer. Following the earlier example on the causation issue, the amount of liability incurred by the dock owner, for taking the defensive action, is \$80 (the difference between the \$100 loss to the boat owner and the \$20 that the boat owner would have otherwise paid to the dock owner), and his total cost from a defensive action is \$81. The cost to the dock owner of not taking the defensive action and litigating later is equal to \$2, so the dock owner will not take the defensive action under the necessity rule. But this is socially undesirable, because the social cost of not taking the defensive action is \$1,020 (the loss to the community from disease plus the loss to the dock owner), while the social cost of the defensive action is \$101 (the loss to the boat owner plus the cost of defense). The reasonableness rule would prevent the dock owner from being held liable for the defensive action in this example.

Just as the necessity doctrine distorts incentives for defensive conduct in some settings, the rule can also distort incentives for offensive conduct. The public necessity doctrine applies to such settings. Suppose the dock has a bomb on it. The incoming boat, by

destroying the dock, will also destroy the bomb, saving the property of people who live near the dock. Under the traditional necessity approach, reflected in *Ploof* and in *Vincent*, the boat owner would be liable to the dock owner for the damage caused by the boat. But this distorts incentives away from the socially desirable action. The public necessity rule protects the boat owner from liability, based on a rule of reason assessment of the costs and benefits of invasion under the circumstances.

The underlying basis for the reasonableness defense and the public necessity defense are the same. The only significant difference appears in their applications. The public necessity defense applies when the invading party destroys property for the benefit of others. The reasonableness defense, the same as public necessity except for the label, applies when the property possessor blocks the invasion in order to protect others.

#### D. Defense and Recapture

The economics of defense change as the length of time following the invasion increases. The law on recapture of property, for example, says that it must be done in a peaceful manner.<sup>45</sup> This is usually followed with the statement that maintaining peace is more important than protecting property rights.<sup>46</sup> This justification merely pushes the question back a bit – why is it better to maintain peace than to protect property rights? I see two possible explanations, both consistent with the framework of this paper. One reason is the possible signaling of consent that comes with delay. Another is the possibility that late defense (i.e., recapture) is more costly than immediate defense.

If an invasion occurs and the possessor waits a long time before attempting to defend the property, his wait may be taken as evidence of consent. For example, suppose in *Ploof* that the invading boat owner arrived at a time when the skies were clear and there was no storm threatening, and tied up to the dock. The dock owner then did nothing for several days. Finally, after a week passed, the dock owner untied the boat and it washed against the shore and was destroyed. The dock owner passed up his chance to act with force in hot pursuit.<sup>47</sup> He could have untied the boat immediately, but he chose not to. His delay may be taken as a signal of acceptance and consent to the invasion. If the objective evidence suggests a reasonable basis for a finding of consent, the dock owner would be liable for the defensive action, even though he would not have been liable if he had acted immediately.

A slightly different case involves the recapture of personal property. Suppose *A* takes *B*'s bicycle. A week passes and all the while *B* knows that *A* has the bicycle, though nothing in *B*'s behavior suggests that he has consented to the taking. Forceful recapture is likely to be much more costly than if *B* had prevented the taking in the first place. *A*, knowing that *B* intends to recapture the property, is likely to take steps to prevent it; hiding the property or lying in wait for *B* to arrive in search of his bicycle. And if *B* were successful in the recapture effort, *A* might attempt to steal it again, and *B* to recapture it again, and

<sup>45</sup> *Bobb v. Bosworth*, 16 Ky. 81 (1808); *Barr v. Post*, 56 Neb. 698, 77 N.W. 123 (1898).

<sup>46</sup> See, e.g., *Bobb v. Bosworth*, 16 Ky., at 16.

<sup>47</sup> On the fresh pursuit requirement, see William L. Prosser, *Handbook of the Law of Torts* 118 (1971).

so on with escalating violence.<sup>48</sup> Of course, if *B* were to think about the cost of escalating violence he would choose to go to court rather than attempt a forcible recapture. But people who have had property taken from them are unlikely to think through all of the long term costs of forcible recapture. The desire to punish, as has been suggested in experimental work,<sup>49</sup> is likely to overwhelm rational decision-making. An optimal regulatory policy would discourage forcible recapture efforts, as the law does, because of its associated costs.<sup>50</sup>

### E. Mistakes

Defensive conduct is one method of protecting property. The alternative is to go to court and seek an injunction to a threatened invasion, or to allow the invasion of the property right and seek compensatory and (possibly) punitive damages. Property rule protection implies that the option of going to court should result in a remedy that would effectively support the property rule.<sup>51</sup> Given this, there should be little need to use defensive measures in low transaction cost settings, because property invasions will be deterred by legal sanctions.

Within the constraints set by necessity and reasonableness doctrines, the defensive actions that are taken will tend to be socially desirable. Property rule protection implies a legal privilege to take defensive action. Within the constraints of the law, the defensive actions that are taken will enhance welfare by obviating more expensive legal remedies and by preventing welfare-reducing transfers.

Property rule protection provides an umbrella, in a sense, in which defensive action can be undertaken, within the reasonableness constraints, without risking liability to the party

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<sup>48</sup> Francesco Parisi, *The Genesis of Ancient Liability*, 3 *Am L. Econ Rev.* 82 (2001).

<sup>49</sup> See, e.g., L.G. Telser, *The Ultimatum Game and the Law of Demand*, 105 *The Econ. J.* 1519 (1995); Rachel T.A. Croson, *Information in Ultimatum Games: An Experimental Study*, 30 *J. Econ. Behav. & Org.* 197 (1996). The results of the Ultimatum Game experiments suggest that there is an innate demand for fairness that may lead to economically irrational decisions.

<sup>50</sup> If one considers the costs of retaliation cycles, it is quite plausible that a restrictive approach toward recapture would enhance welfare. In general, the external costs associated with various types of defensive conduct could explain several features of the law on defensive conduct. For example, jurisdictions vary in their treatment of certain defenses – the use of force to defend a dwelling, or the choice between retreat and defense. These differences may be due to local perceptions of the external costs (or benefits) of certain defensive actions. In a high-crime area, for example, people may view defensive conduct as having a lower social cost (or, equivalently, a greater social benefit) because it signals to predatory criminals that they will meet resistance. Accommodative views toward the use of force in defense may reflect perceptions on the ground about the signals that should be sent to predatory criminals. The notion that costs vary according to the type of defense was offered by Henry Smith, who focused on information costs, see Smith, *supra* note 6.

<sup>51</sup> If the remedy supports the property rule, then it should, at a minimum, eradicate the incentive to invade someone's property right. In the trespass setting, that would require the damage award to eliminate any gain that might be enjoyed by an invading party. Thus, if the intentional trespasser expected to gain \$10,000 from the invasion, the damage award should be no less than \$10,000. If the injury from the trespass were only \$5,000, then the punitive damage amount should be an additional \$5,000. On the relationship between property rules and punitive damages see Hylton, *Property Rules and Liability Rules, Once Again*, *supra* note 5, at 178-183.

protected by the property rule. Thus, where under the specific conditions the perception of the need to use force to defend property is reasonable, an honest mistake as to that perception will not be a basis for liability.<sup>52</sup> As scholars have noted, this is different from the treatment of honest mistakes by actors who are outside of the property rule umbrella, such as honest mistakes leading to trespass, which result in liability.<sup>53</sup>

The property rule's shielding of liability for honest mistakes in defense can be understood as a complement to its basic function.<sup>54</sup> Property rules protect parties from having their subjective valuations of their rights expropriated (and society from the costs that would be generated). This implies a robust shield against invasive or expropriative activity. Under this robust shield, honest mistakes in defense are privileged, and there is no duty to take care to avoid injuring a party who attempts to invade or expropriate the protected party's rights. If a party protected by a property rule were potentially liable for honest mistakes in defense, or for negligence in defense, he would be compelled to take care in the exercise of his right, which diminishes its value, and effectively permits non-protected parties to expropriate some of its value.

I am distinguishing between the concept of taking care and that of reasonable defensive conduct. Reasonable defensive conduct implies both a reasonable perception of the need to act in defense, and a reasonable degree of force in carrying out the defensive action. These concepts are distinguishable from having a duty to take care even when you have adopted a reasonable defensive measure. For example, consider the case of a trespasser who forcefully enters the possessor's land. The law permits the possessor to use reasonable force to expel the trespasser.<sup>55</sup> Suppose the possessor warns the trespasser to flee or face a violent response. The trespasser runs toward the boundary and is injured when he falls into a hole in the ground. A duty of care in the exercise of defense might result in liability to the possessor for failing to warn the trespasser about the hole in the ground.<sup>56</sup> But such a duty of care in defense would contradict settled law on the duty to trespassers.<sup>57</sup>

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<sup>52</sup> William L. Prosser, *Handbook of the Law of Torts* at 114 (1971).

<sup>53</sup> See, e.g., Richard A. Epstein, *Cases and Materials on Torts* 56 (9th ed., 2008).

<sup>54</sup> Hylton, *Duty in Tort Law: An Economic Approach*, 75 *Fordham L. Rev.* 1501, 1510 (2006).

<sup>55</sup> If the trespasser enters peacefully, the possessor is not permitted to use force in response, and must limit himself to a demand that the trespasser leave. If the trespasser enters forcefully (e.g., breaking down a fence), then the possessor can respond with reasonable force to expel the trespasser. See, e.g., *M'Ilvoy v. Cockran*, 2 A.K. Marsh, 271, 275-276 (1820).

<sup>56</sup> Some recent case law has established a duty to take care in the exercise of defense, see *Brown v. Robishaw*, 922 A.2d 1086 (Conn. 2007) (involving self-defense and the duty to take care). However, this development should be understood as a result of the existence and importance of insurance. Because insurance policies restrict recovery to instances of negligence, litigating parties have (in essence) lobbied for an expansion of negligence doctrine in many jurisdictions. In addition, much of this conduct involves methods of defense that would have been considered unreasonable under traditional law.

<sup>57</sup> The case where the possessor steers the trespasser toward the hole, or off of a cliff, would be different. In that case, the possessor would have intentionally injured the trespasser, which is a basis for liability. See, e.g., *Robert Addie & Sons (Collieries), Ltd. v. Dumbreck* [1929] A.C. 358, 374 (H.L.); *Turbeville v. Mobile Light & R. Co.*, 221 Ala. 91, 93-96 (1930).

This theory explains the treatment of honest mistakes under necessity doctrine. Necessity doctrine essentially flips the property rule protection from the possessor to the invader.<sup>58</sup> Interestingly, and perhaps counter-intuitively, the property rule's shield flips with the property rule. Honest mistakes that are made by the invader who is (now) protected by the necessity rule are privileged, and cannot be used as a basis for liability, as long as the invading party acts within the reasonableness constraints. If under the conditions the perception of the need to invade (under necessity) is reasonable, the invading party will not lose the property rule protection because of an honest mistake as to that perception.<sup>59</sup>

Consider honest mistakes in the recapture of personal property. If the owner of the item of personal property is dispossessed through force or through fraud, he is entitled to use force to recapture the property, as long as he acts in immediate pursuit of the invading party.<sup>60</sup> So long as the owner's perception of dispossession is reasonable, and so long as he uses reasonable force to recapture the item, honest mistakes will not be a basis for the owner's liability to the invading party. If, however, the owner voluntarily transfers the item to another person in the absence of force or fraud, he is not privileged to use force to recapture it. Moreover, he will be liable for injuries caused by his use of force even when he makes an honest mistake as to the facts that could justify the privilege to use force.

In the case of recapture of personal property, the treatment of owner and temporary possessor is similar to that under necessity doctrine. If the owner transfers the property to the temporary possessor, in the absence of force or fraud, the property rule flips, protecting the temporary possessor. In this case, the expropriation of value is less important as a justification for property rule protection than avoiding the social costs of violent efforts to recapture property.

#### F. Eminent Domain, Defense, Property Rules, and Liability Rules

The theory of this paper sheds new light on the nature of eminent domain law. Calabresi and Melamed offered eminent domain as an illustration of a specific liability rule that replaces the property rule protecting the landowner in a special setting (acquisition by the state) where the cost of reaching an agreement is high because of hold-outs.<sup>61</sup> The model here shows that this description is inconsistent with the property rules framework. As in the case of necessity, eminent domain flips the property rule from the property owner to the invader (the government). This is made clear by analyzing the treatment of defense under eminent domain.

If a landowner takes defensive actions in order to prevent the government from acquiring his property, such as erecting or removing barriers, those defensive actions will be

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<sup>58</sup> The flipping property under necessity doctrine seems to have been first noted in Richard A. Epstein, *A Clear View of The Cathedral: The Dominance of Property Rules*, 106 *Yale L.J.* 2091, 2108-2109; see also Smith, *supra* note 5, at 1735.

<sup>59</sup> Prosser, *Handbook of the Law of Torts* 127 (1971).

<sup>60</sup> *Id.* 117-119.

<sup>61</sup> Calabresi and Melamed, *supra* note 3, at 1106-1108.

enjoined.<sup>62</sup> Eminent domain strips the property owner of his privilege to use defense to retain his property. Indeed, the right to use force, in order to carry out the taking or to defend against the property owner's force, switches to the government.<sup>63</sup>

The change in the right to use defense implies that eminent domain is *not* a specific type of liability rule, as asserted by Calabresi and Melamed; it is a case where the property rule flips from the landowner to the government. To remain consistent with the necessity theory that justifies eminent domain, the value of the acquiring party's use must be greater than that of the landowner. Compensation is required under eminent domain for the same reason that it is required under necessity: to regulate the incentive to take in the first place. If the government did not have to pay compensation, it might take property under its eminent domain power for uses that are less valuable than that of the targeted landowners.

This perspective on eminent domain has the additional implication that a genuine example of a liability rule would be one that permits the owner to retain his right to use defense, while at the same time allowing the invader to take and pay a sum of money (damages or a penalty) determined by the state. This is observed in the typical illustrations where the liability rule operates, where negligence or strict liability rules apply. A driver certainly has a legal privilege to take defensive actions in order to avoid injury from another driver's negligence. A landowner certainly can take defensive actions to avoid injury from an adjoining landowner's negligence or introduction of a nuisance or an abnormally dangerous activity.<sup>64</sup> Because of the privilege to use defense, these instances are proper illustrations of the liability rule. The defenses that are used will be regulated by the reasonableness and necessity doctrines surveyed in this paper.

An additional implication of this analysis is that the privilege to use defense is the fundamental component of the property rule. Calabresi and Melamed define the property rule elliptically by saying that "an entitlement is protected by a property rule to the extent that someone who wishes to remove the entitlement from its holder must buy it from him in a voluntary transaction in which the value of the entitlement is agreed upon by the seller".<sup>65</sup> An alternative and more descriptive definition of the property rule is that it authorizes the entitlement holder to use defense to protect his entitlement, and to use available legal remedies (damages, injunctions) to prevent, deter, or cancel the effects of a nonconsensual transfer of his entitlement. Still, the Calabresi and Melamed definition is appropriate because it leaves entirely open the means by which the entitlement is

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<sup>62</sup> See, e.g., *Stringer v. United States*, 471 F.2d 381 (1973). The government erected barricades in order to take the plaintiff's property, and the plaintiff removed the barricades. The government sued successfully for damages for the removal of the barricades. The court noted that the only remedy available to the property owner is a lawsuit.

<sup>63</sup> This is a necessary implication of *Stringer*, supra note 61, and background law. If the government can use force to seize property under eminent domain, and the property possessor has no legal self-help remedy, then clearly actions by the government to defend against the possessor's efforts to prevent the seizure are privileged.

<sup>64</sup> However, the landowner is not *required* by the law to take a defensive action in order to avoid a finding of contributory negligence, see *Leroy Fibre Co. v. Chicago, M. & St. P. Ry.*, 232 U.S. 340 (1914).

<sup>65</sup> Calabresi and Melamed, supra note 3, at 1092.

protected. It happens that the primary protection mechanism is defense, rather than the instruments provided by the courts. When the property rule flips, the privilege to use defense flips with it. This implies that the property rule carries with it the privilege of defense. There are, however, settings in which the entitlement holder loses the right to enjoin or even to sue for compensation, but he retains the privilege to use defense to protect his entitlement. For example, the law provides no formal protection, in the form of damages or injunction, to an owner whose property is encroached upon by a tree growing on a neighboring property.<sup>66</sup> But the law permits the property owner to take defensive action by cutting the branches or roots encroaching on his property. The property rule protects the entitlement owner, but only by privileging his use of defense.

### G. Instinctive Defense

The conclusion that defensive action is socially desirable within the constraints of tort law does not necessarily apply to instinctual conduct. Much of self defense is instinctual and probably genetically hard-wired. There are few people, if any, who would not act immediately to prevent the theft of their property.

In a specific instance of action, instinctual defensive conduct is unlikely to conform to any welfare principles. The primary goal of the actor is the maintenance of his possessions or even survival, and there is little time for him to rationally think through consequences. In the overall history of humans, instinctual self defense probably has developed through evolution as a stable response to conduct that threatens immediate injury. It provides a credible threat of retaliation to any first attacker, and therefore reduces the likelihood of the initial attack. Given this benefit, instinctual self defense probably has served a welfare-enhancing purpose in the long run.

I am considering the most common types of instinctive defensive conduct, such as the typically reflexive effort to block a punch in the face. An expansive notion of instinctive action could incorporate a wide range of behavior that we would ordinarily view as aggressive. Given that some degree of aggression is genetically hard-wired by evolutionary pressure,<sup>67</sup> much offensive conduct could be interpreted as instinctive, and perhaps defensive in some sense, as well.<sup>68</sup> I am not embracing such an expansive view of instinctive defense here.

In terms of the law, instinctual self defense is treated differently from rational self defense. Instinctive, gut-level action would not satisfy the legal definition of an intentional tort. It is not the volitional act of a rational agent, as the court required of an intentional tort in *Scott v. Shepherd*.<sup>69</sup> Imposing liability for instinctual acts of defense would only reduce social welfare.

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<sup>66</sup> See, e.g., *Michalson v. Nutting*, 175 N.E. 490 (Mass. 1931); *Robinson v. Clapp*, 32 A. 939 (Conn. 1895); *Smith v. Holt*, 174 Va. 213, 5 S.E.2d 492 (1939); *Ponte v. DaSilva*, 388 Mass. 1008, 1010, 446 N.E.2d 77, 78 (1983).

<sup>67</sup> Konrad Lorenz, *On Aggression* (1963).

<sup>68</sup> Randy Thornhill and Craig T. Palmer, *A Natural History of Rape: Biological Bases of Sexual Coercion* (Cambridge, MA: The MIT Press, 2000).

<sup>69</sup> 96 Eng. Rep. 525 (K.B. 1773).

#### IV. Conclusion

Defensive conduct has received relatively little attention in tort theory. This paper attempts to fill at least part of this gap in the literature. Defensive conduct, because it is a basic feature of human behavior, is observed in both high and low transaction cost settings. For this reason, consideration of defensive conduct provides a better understanding of the relative merits of property rules and liability rules. I have shown that when defense conduct is taken into account, property rules are unambiguously preferable to liability rules in low transaction cost settings, a conclusion that supports the original claim of Calabresi and Melamed. I have also shown how consideration of defensive conduct contributes to the development of a positive theory of the necessity and reasonableness doctrines that regulate it.