

# “Law and...” a New Perspective

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**How to cite this paper:** Cati, M. M. (2024). “Law and...” a New Perspective. *Beijing Law Review*, 15, 2543-2564.

<https://doi.org/10.4236/blr.2024.154139>

**Received:** October 23, 2024

**Accepted:** December 28, 2024

**Published:** December 31, 2024

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## Abstract

This paper revisits the interplay between law and economics from an unconventional perspective, shifting away from the traditional lawyer-economist view to that of an economist-mathematician. Inspired by Calabresi’s seminal 2016 work, “The Future of Law and Economics—Essays in Reform and Recollection,” it challenges existing interpretations and introduces a novel methodological framework employing set theory. This approach elucidates and expands upon the pioneering concepts discussed in Calabresi’s notable text “Tragic Choices,” particularly in the context of behavioral economics and its application to law. The paper utilizes set theory not only as a tool for theoretical argumentation but also as a means to demonstrate how behavioral economics can broadly influence both legal and economic theories. Essential concepts from set theory used in this analysis are further elaborated in the **Appendix**, enhancing the intuitive understanding of our methodological application.

## Keywords

Law and Economics, Economic Analysis of Law, Behavioral Economics, Behavioral Law and Economics

## 1. Introduction: Economic Analysis of Law and Law and Economics

Judge Guido Calabresi’s book (Calabresi, 2016) “The Future of Law and Economics—Essays in Reform and Recollection” not only represents a masterpiece but also, paraphrasing a sentence by the author himself, a “pearl beyond price”<sup>1</sup>, a new door opened to a deeper insight on the existing relationship between legal theory and economics or, more generally speaking, between “Law and...”.

In the first pages of his dense book, Judge Calabresi elucidates the distinction,

<sup>1</sup>The author referred to the value of “life” as “a pearl beyond price”. Here, the new book by the author is called “a pearl beyond price” on the basis of the conviction that it represents a new achievement in law and economics and that this can be valuable in life.

often disregarded by the literature, between Economic Analysis of Law (EAL) and Law and Economics (LE), asserting the following (Calabresi, 2016)<sup>2</sup>:

“Economic Analysis of Law uses economic theory to analyze the legal world” and that “it examines that (legal) world from the standpoint of economic theory and, as a result of that examination, confirms, casts doubt upon, and often seeks reform of legal reality”... “In its most aggressive and reformist mode, having looked at the world from the standpoint of economic theory, if it (EAL) finds that the legal world does not fit, it proclaims that (legal) world to be irrational.”

Different from EAL, LE<sup>3</sup> (Calabresi, 2016, 2017) “instead begins with an agnostic acceptance of the world as it is, as the lawyer describes it to be. It then looks to whether economic theory can explain that world, that reality. If it cannot, rather than automatically dismissing that world as irrational, it asks two questions.

The first question<sup>4</sup> can be summarized as follows: is economic theory able to provide “a more comprehensive view of legal reality”? If not, LE asks a second question: can economic theory be amplified (changed) to become able to explain a specific legal reality? If so, LE suggests that these<sup>5</sup> “changes imposed on economic theory... should be made part of economic theory generally” (Calabresi, 2016, 2017).

Globalization has significantly influenced the intertwining of legal and economic frameworks internationally. As economies become more interconnected, legal systems increasingly adapt to manage complex global trade, intellectual property rights, and labor standards. For instance, the World Trade Organization (WTO) plays a pivotal role in shaping national laws to ensure fair trade practices globally, promoting economic policies that support international cooperation and competition. Moreover, international agreements like the Paris Agreement impact national policies on environmental law and economic activities, highlighting the necessity for legal systems to align with global economic policies. This international context further underscores the relevance of frameworks like EAL and LE, which offer adaptive methodologies to analyze and respond to such large-scale changes.

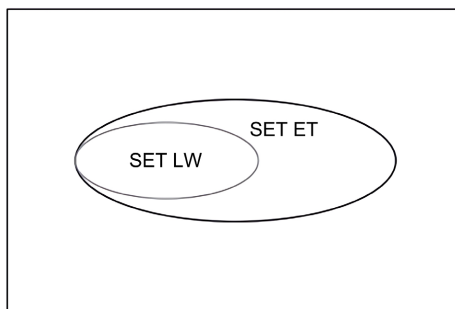
EAL and LE represent two different ways (Hylton, 2019) of studying the relationship between legal and economic theories. Using set theory as a conceptual model, we can illustrate these differences with Venn diagrams. In EAL, the legal world (LW) is entirely encompassed within economic theory (ET), signifying a one-way relationship where law is fully subordinated to economic principles, as shown in **Figure 1**.

<sup>2</sup>Page 2 of Guido Calabresi (2016), *The Future of Law and Economics—Essays in Reform and Reflection*.

<sup>3</sup>Id.—page 3.

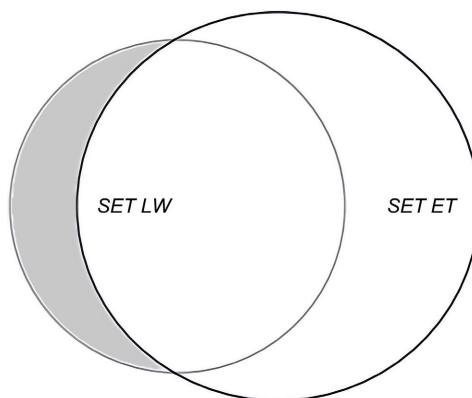
<sup>4</sup>This important question was addressed by Guido Calabresi and A. Douglas Melamed in their world-wide renown paper “*Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*”.

<sup>5</sup>As from note 3, page 4.

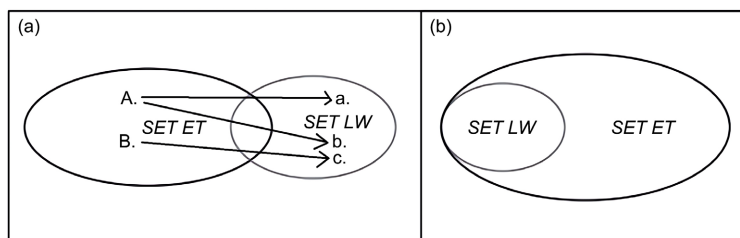


**Figure 1.** The Set LW is a subset of the Set ET: there is a one way relationship where law is fully subordinated to economic principle.

Any legal element not explained by economic models is either targeted for reform or dismissed as irrelevant, as illustrated by the shaded area in **Figure 2**. A closer examination of EAL's approach reveals a unidirectional relationship between economic models and legal norms, represented by arrows from economic theory (ET) to the legal world (LW) (**Figure 3**). In this model, each economic model explains specific legal norms, suggesting that legal norms depend entirely on economic theory for validation. This univocal approach can be limiting, as it does not allow for any influence of law on economic theory.

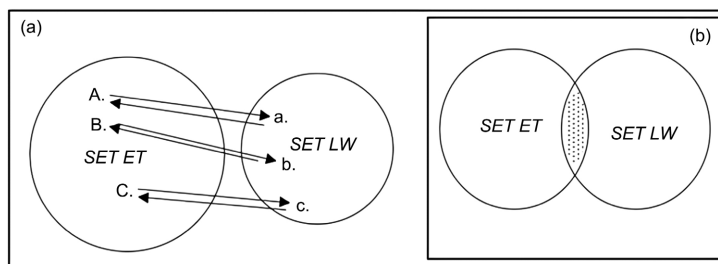


**Figure 2.** All the legal points not included in the intersection between the SET LW and the SET ET are either targeted for reform or dismissed.



**Figure 3.** (a) EAL states that there is a unidirectional relationship (represented by the arrow from the set ET to the set LW) between ET and LW; (b) The SET LW is a subset of the SET ET, meaning that legal norms depend entirely on economic theory for validation.

In contrast, LE champions a reciprocal and dynamic relationship. It does not seek to subordinate law under economics but advocates for an enriching interaction where both disciplines inform and refine one another. This biunivocal relationship is depicted by the overlapping areas of SET ET and SET LW (**Figure 4(a)** and **Figure 4(b)**), suggesting a synergistic exchange that fosters richer, more nuanced interpretations and applications in both fields.



**Figure 4.** (a) LE states that there is a biunivocal relationship (represented by the bidirectional arrows from the SET ET and the ET LW and vice versa) between the SET ET and the SET LW; (b) The biunivocal relationship between the SET ET and the SET LW is represented by the overlapping areas of the two sets ET and LW.

Efficiency within the legal system is essential for economic development as it reduces transaction costs, enforces property rights, and ensures the predictability of contractual relationships. Efficient legal frameworks enable businesses to invest with greater confidence, knowing that the legal system will enforce agreements and protect assets. This predictability fosters a stable economic environment conducive to growth. The concept of legal efficiency aligns closely with economic theories that emphasize reducing information asymmetry and minimizing enforcement costs. By ensuring that legal rights are well-defined and transactions transparent, legal systems help enhance market efficiency, supporting the view that law not only enforces rules but also serves as a framework underpinning economic performance. Price theory plays a crucial role in economic discourse, particularly within the frameworks of EAL and LE, as it explains how market prices convey essential information for the optimal allocation of resources. Prices in a market economy reflect both the scarcity of resources and consumer preferences, guiding economic agents to make informed decisions. This theory, foundational to microeconomic principles as discussed by [Smith \(2012\)](#) in *The Wealth of Nations* and further elaborated by [Hayek \(1945\)](#) in *The Use of Knowledge in Society*, underpins the efficient market hypothesis where price signals help coordinate decentralized decision-making, optimizing resource allocation across the economy.

Further insights into the application of economic theory to legal frameworks are found in contemporary studies. [Chavas and Pan \(2022\)](#), in *On the Economics of Efficiency, Bargaining and Welfare Distribution*, analyze how bargaining models within economic systems impact legal outcomes and welfare distribution. This work underscores the practical implications of economic theory on legal policy, offering a robust framework that complements EAL and LE. Additionally, Betz's

exploration in *Capital Structures: Vectorizing the Harrod-Domar Model in Macro-Economics* (Betz, 2018) provides insights into how macroeconomic models inform legal structures to support sustainable economic growth, aligning capital allocation with long-term development goals.

## 2. More on the Difference between Economic Analysis of Law and Law and Economics

From the discussion in the previous paragraph, *EAL* and *LE* have a common basis in the fact that they both indicate that any change in the existing law must refer to a “source of values separate from law”<sup>6</sup>, or equivalently, to some “extralegal Archimedean points from which the legal world might be moved and reformed”<sup>7</sup>. From a historical perspective, the idea that any change in the legal world should rely on a system of values external to law represented a true novelty in a world where law itself was viewed as an independent discipline that could be changed only by a revolution or by an “unanalyzed majoritarianism”. Additionally, at the time, the choice of economics as the outside reference point strengthened the importance and solidity of this new approach.

Faure (2008) observes the following: “Calabresi was undoubtedly the first scholar to apply insights from economic theories in his seminal publication ‘Some Thoughts on Risk Distribution and the Law of Torts’ (Calabresi, 1961), which was a milestone in the development of the theory that later became known as the new law and economics”.

There are two questions that can now be addressed:

- the type of relationship between the legal world and the outside reference point, i.e., economic theory—that the two main strands of thought, i.e., *EAL* and *LE*, have considered;
- the type of economic theory *EAL* and *LE* refer to.

## 3. The Coasean “View”

In his celebrated article “The Nature of the Firm”<sup>8</sup>, Coase<sup>9</sup>, who, together with Calabresi, is considered one of the first two founding fathers of the new law and

<sup>6</sup>Page 9 of “The Future of Law and Economics—Essays in Reform and Recollection” (2016) Guido Calabresi, Yale University Press, New Haven and London.

<sup>7</sup>Page 10 of “The Future of Law and Economics—Essays in Reform and Recollection” (2016) Guido Calabresi - Yale University Press, New Haven and London.

<sup>8</sup>Coase (1937) “The Nature of the Firm” 4 *Economica* 386.

<sup>9</sup>Marciano and Ramello (2014) “Consent, Choice and Guido Calabresi’s Heterodox Economic Analysis of Law”—*Law and Contemporary Problems*, No 2, Vol. 77—see introduction “...Ronald Coase, which puts the main focus on economic problems, and takes legal rules and institutions into account only insofar as they can influence economic activities and serve to restore the full working of markets. From a methodological perspective, this law-and-economics approach rests on a definition of economics centered on its subject matter, that is to say, on its scope. It is assumed that economic activities are specifically defined—around the production, consumption, and distribution of wealth—and that the economist’s objective and task is essentially to study those activities. Coase consistently and repeatedly claimed this to be his perspective, describing himself primarily as an economist who was not interested in studying the working of the legal system per se”.

economics (*LE*) movement, asked the fundamental question of *LE*, i.e., why do firms exist if markets are costless? Coase's answer to that question represented a dramatic change in economic theory, even if it was not accepted until long after its publication<sup>10</sup>. Instead of concluding that the existence of firms is a "nonsense", he asked himself another question, i.e., would it be a "nonsense" to assume that markets have costs and that these costs can be compared with the costs involved in the firms' activities and in the activities of other nonmarket command structures? Coase's great idea to alter the existing economic theory and make it capable of explaining previously unexplainable things (i.e., the existence of firms)<sup>11</sup>, gave rise to an extensive literature<sup>12</sup> on the topic. The subsequent article by Coase (who was, in fact, an institutional economist) entitled "The Problem of Social Cost"<sup>13</sup> further clarified the implications of the costs of markets, e.g., externalities, and of nonmarket command structures and showed the possible benefits deriving from the markets. On this point, Van den Bergh (2008)<sup>14</sup> observes that "Coase's insights known as the Coase theorem can be best understood as a criticism of the Pigouvian approach toward externalities. In Pigou's view, externalities could be internalized by levying taxes on harmful activities".

Coase criticized this view, arguing that externalities are reciprocal and that the initial allocation of property rights has no impact on efficiency in the absence of

<sup>10</sup>Calabresi (1991) "The Pointlessness of Pareto: Carrying Coase Further". 100 Yale Law Journal 1217. See page 1214: "Another and more important reason why lawyers and economists ignored The Nature of the Firm is the extraordinary breadth of its insight. A full understanding of the costs and possible benefits requires us to accept something that runs against some of our most basic presuppositions. It requires us to realize that neither market nor market forms of organization are primary; rather, they are two approaches which interrelate in oddly symmetrical ways as (a) people seek to find the most efficient (least costly) way of structuring their relationships, and, given that both approaches exist, (b) people try to use the power (wealth or authority) which each approach gives them to accrue maximum benefits to themselves. Obviously, both markets and command structures have distributional consequences. In a market regime, some are made richer and some made poorer, in a command structure, some have greater authority and some less. It is equally clear that, in an all-market regime, wealth constitutes authority, and that, in an all-command structure, authority results in wealth".

<sup>11</sup>Ibidem note 17. See page 1220: "It is no use to say that, when transaction costs keep us from achieving a state in which some are better off and none worse off, we should use 'non markets' methods to reach that position. The statement seems plausible because the existence of high transactions costs suggests that we should replace expensive markets with cheaper, non-market forms of organization. But The Nature of Firms provided the answer to this proposition. If we knew of and had available a non-market method that is ex ante Pareto superior, we would already have used it! That is precisely Coase's explanation of how firms come into existence. If we have not used such a market substitute, it must be because some people rightly or wrongly, believe that they will lose from its establishment. That is, some oppose the move to a non-market structure because they believe they do better under a market structure. And those who would gain from the change cannot feasibly compensate them from their losses, either because it is too expensive to do so, or because agreements to compensate cannot be enforced".

<sup>12</sup>See, for example, Harrod Demsetz, who brilliantly applied Coase's view to important legal phenomena, (1967) "Toward a Theory of Property Rights" American Economic Review, May, at 347-59 and (1972) "Toward a Theory of Property Rights II: The Competition between Private and Collective Ownership", 31 J. Legal Stud. 13.

<sup>13</sup>Coase (1960) "The Problem of Social Costs", 3 J.L. & Econ. 1 (1960).

<sup>14</sup>See page 2, Van den Bergh (2008) "Introduction: The impact of Guido Calabresi on Law and Economics Scholarship" Erasmus Law Review Volume 1, Issue 04.

transaction costs. Consequently, the legal system may contribute to efficiency by decreasing the size of the transaction costs. If transaction costs are prohibitively high, the initial allocation of property rights will be final and inefficiencies cannot be corrected through the market mechanism.” The original ideas of Ronald Coase, which have become known as the Coase Theorem, were extended<sup>15</sup> by “Guido Calabresi who, together with Douglas Melamed, wrote the most cited paper in law and economics, i.e., “Property Rules, Liability Rules and Inalienability: One View of the Cathedral”<sup>16</sup>. With that paper, representing the true seminal contribution of law and economics<sup>17</sup>, Guido Calabresi and Melamed introduced with an unprecedented clear cut the “distinction between property rules and liability rules”... “This distinction, which can be seen as a sophisticated development of the Coase Theorem, has become one of the most prominent analytical tools for analyzing protection of entitlements in various fields of law.”<sup>18</sup>

As Calabresi and Melamed pointed out, the problem of environmental pollution and any conflict involved in it, such as a nuisance suit between a polluter *P* and a resident *R*, was traditionally resolved by a court in the following three alternative ways (rules)<sup>19</sup>: “First the court could find a nuisance and issue an injunction against *P* in favor of *R* (meaning that *P*, in order to keep on polluting, would have to buy off *R* in a subsequent, postinjunction transaction). *Second*, the court could find a nuisance but permit *P* to go on polluting upon payment of damages to *R*. *Third*, the court could find the pollution not to be a nuisance and permit *P* to continue (meaning that *R*, in order to bring a halt to the pollution, would have to buy off *P* in a subsequent transaction).”<sup>20</sup>

Different from the existing literature on the topic, Calabresi and Melamed modeled the “conflict between *P* and *R* in terms of its two variables: 1) an *entitlement* to the environmental resource at stake, such as air, water, peace and quiet, or a view; and 2) the *means of protecting* that entitlement”<sup>21</sup>. The “fourth rule” discovered by the two authors “recognizes an entitlement in *P* protected by a liability rule, meaning that *R* can force *P* to stop polluting provided *R* pays compensation determined not by *P* but rather (as above, with rule two) by the court, as “damages” for which *R* is liable. Rule four is merely the liability rule alternative to

<sup>15</sup>See Van den Bergh, page 2, supranote 22.

<sup>16</sup>Calabresi & Melamed (1972) “Property Rules, Liability Rules, and Inalienability: One View of the Cathedral” Harvard Law Review, Volume 85, Number 6.

<sup>17</sup>Calabresi, Guido and Melamed, A. Douglas: see page 1, supranote 20: “Only rarely are Property and Torts approached from a unified perspective. Recent writings by lawyers concerned with economics and by economists concerned with law suggest, however, that an attempt at integrating the various legal relationships treated by these subjects would be useful both for the beginning student and the sophisticated scholar. By articulating a concept of ‘entitlements’ which are protected by property, liability, or inalienability rules, we present one framework for such an approach. We then analyze aspects of the pollution problem and of criminal sanctions in order to demonstrate how the model enables us to perceive relationships which have been ignored by writers in those fields.”

<sup>18</sup>See Van den Bergh page 3 supranote 22.

<sup>19</sup>See the explanation given by Krier (1995) “Property Rules and Liability Rules: The Cathedral in Another Light.” S. J. Schwab, co-author. N. Y. U. L. Rev. 70, no. 2: 440-83.

<sup>20</sup>See page 441, supranote 27.

<sup>21</sup>See page 442, supranote 27.



property rule three, just as rule two is the liability rule alternative to property rule one.”<sup>22</sup> What Calabresi and Melamed added to the traditional thinking (summarized by the table in the footnote) was an extraordinary way to “put into practice” the Coase view of the world. If we accept the idea that markets imply costs, then a question (see also Smith, 2019)<sup>23</sup> arises spontaneously: What costs should a society try to decrease to increase the well-being of its individuals, and what other costs can a society endure or not consider as relevant? Are there costs that a society does not consider (or at least only implicitly) and that should be instead considered explicitly (in some instances, with some compensation mechanism) to improve the well-being of its members? We can also ask ourselves about the types of barriers<sup>24</sup> (to technological innovation, to knowledge innovation or to changes in the legal system) that a society should try to abate.

4. The Calabresian “New View”

The previous queries<sup>25</sup> are important, since they have greatly influence what legal scholars are expected to think about creating a better world. However, why should legal scholars rather than economists be in charge of such changes that clearly involve a “law and economic” reasoning?

The answer, given by Judge Calabresi<sup>26</sup>, one of the founding fathers of law and economics<sup>27</sup>, in his book, to the previous questions, in my opinion, sheds light on the significant role that lawyers, rather than institutional economists, had and still

<sup>22</sup>See page 444, supranote 27: The structure of the situation can be represented by a two by two matrix:

Table 1. Calabresi & Melamed’s “four rules”.

		Method of protection	
		Injunction/Property Rule	Damages/Liability Rule
Initial Entitlement	Resident	Rule 1	Rule 2
	Polluter	Rule 3	Rule 4

<sup>23</sup>Smith, H.E. Complexity and the Cathedral: making law and economics more Calabresian. *Eur J Law Econ* 48, 43-63 (2019). <https://doi.org/10.1007/s10657-018-9591-x>

<sup>24</sup>What part of the society is going to win or to lose from such diminished costs or abated barriers? Are losers going to be compensated by winners? Under which circumstances?

<sup>25</sup>See also Bix (2019) Law and economics and the role of explanation: A comment of Guido Calabresi, *The Future of Law and Economics. Eur J Law Econ* 48, 113-123. <https://doi.org/10.1007/s10657-018-9592-9>

<sup>26</sup>Kalman (2014) “Some thoughts on Yale and Guido”—Law and Contemporary Problems No 2, Vol. 77.

<sup>27</sup>Calabresi (2003) “An Introduction to Legal Thought: Four Approaches to Law and to the Allocation of Body Parts” 55 *Stanford Law Review* 2117-2002-2003. See page 2118: “It (*law and economics*) sought a greater role for scholars, and frequently for courts as well, 21 in the criticism and reform of law. It often called its view of law as ‘functionalist,’ although that said little about the functions it thought law ought to perform. Its underlying aim was, and is, to break out of a self-contained system of legal values which are either unchanging or change only mystically, revolutionarily, or at the hands of legislators unguided by legal scholars’ critiques and suggestions. Legal scholarship was to be at the core of lawmaking and law reform! But if it was, why should anyone pay any more attention to the views of such scholars than to those of any other citizen? What special insight did legal scholars have into values that could make them in any way privileged to criticize laws, to recommend reforms, and to indicate the functions that the legal system should serve? The answer, for the twentieth-century functionalists, lay (as it had for Bentham long before) in other scholarly disciplines.”



have in shaping law and economics scholarship as it is now. Legal scholars can be seen as doing the work of *empiricists*; they look at “cases”, using economic models to gain better insight; then, they return to law and see if it fits in the economic theory, and if it does not fit, instead of considering that legal reality as a “nonsense”, they ask themselves the following basic “modified”<sup>28</sup> Coasean question: would it be “nonsense” to change economic theory slightly to have a better law? This way of looking at the relationship between law and economics as bilateral<sup>29</sup> is typical of the Yale approach attributable to Calabresi<sup>30</sup>, who gave rise to a large legacy of remarkable lawyer—economists.

In his article “An Introduction to Legal Thought: Four Approaches to Law and to the Allocation of Body Parts”, Calabresi (2013) identifies four distinct approaches to law in the United States, as follows: “formalism”, “law and...”, “the legal process school” and “law and status”.

“Formalism” considers law as a self-contained (in other words, there is no need to refer to any other eternal source of value) field of study, and scholars simply have to build a coherent and consistent legal system. “The legal process school” approach focuses its attention on the comparative analysis of institutions to identify the functions that are proper to each of them. “Law and status” studies, in a critical manner, if there are preselected groups of people negatively affected by law and the legal system. “Law and...” assumes, differently from “formalism” and from the other approaches, that the law depends on other disciplines and that those disciplines to which “law and...” refer to represent a true source of value for the making of law and its reform.

It is intuitive to realize that the basic idea of the new movement synthesized by “Law and...” can be easily extended and applied to “any science and any other science” and that this had its origin in the fundamental idea of Guido Calabresi. As pointed out by the author, the strength of law “lay in the fact that it could gather together the wisdom (and values) of as many of these fields as were relevant to the issue at hand into one complex and, by tradition, rigorous system”<sup>31</sup>.

<sup>28</sup>“Modified” simply because Calabresi applied it to the biunivocal relationship between law and economics.

<sup>29</sup>Arthur Corbin, in his farewell letter (see the appendix of Judge Calabresi’s book *The Future of Law and Economics—Essays in Reform and Recollection*) to the Yale Law School faculty stressed the importance of the bilateral relationship epitomized by law and economics.

<sup>30</sup>Mattei (2005) *The Rise and Fall of Law and Economics: an Essay for Judge Guido Calabresi*, 64 Md. L. Rev. 220—See page 247: “Once upon a time in New Haven, Connecticut, there was a young lawyer-economist, cosmopolitan in learning, and critical in spirit. He taught lawyers worldwide that no value, not even human life, is protected at any price, and that acknowledging this reality could help us clarify our priorities. This insight has produced the final collapse of legal positivism and has opened a daunting space for legal creativity to imagine a better, fairer, and more efficient social organization. That lawyers and economists should work together for this common task was Calabresi’s recommendation”.

<sup>31</sup>Supranote 15—see pages 2119-2120: “Legal Scholars should look, as appropriate, to economics, philosophy, history, psychology, sociology, literature, or virtually any other field or combinations of fields of study for guidance in developing a scholarly critique of the current legal landscape or of particular parts of it. Law was not to be viewed as independent or autonomous, but rather as dependent on these other fields. Its strength lay in the fact that it could gather together the wisdom (and values) of as many of these fields as were relevant to the issue at hand into one complex and, by tradition, rigorous system. Because of this, the legal scholar did not need to feel bound by the self-imposed limits of the underlying disciplines, however useful they might be for the practitioners of that discipline”.

This is an important issue, because it represents one of the most relevant characteristics of the Yale tradition, which is quite different from the so called Chicago tradition, particularly linked to Richard Posner<sup>32</sup>, considered, together with Gary Backer, as one of the founders of the economic analysis of law. Posner used an *existing* economic theory to study and eventually criticize the effectiveness of the legal theory, but the relationship between economic analysis and law he was thinking about was *unilateral*. Calabresi, before Posner and Backer, proposed a different approach known as *law and economics (LE)*, that, differently from economic analysis of law, describes a bilateral relationship between law and economics. To have a better understanding of the characteristics of *EAL* and *LE*, let us go back to the difference between positive and normative economics; positive economics studies the economic system as it is, while normative economics explains how the economic system should be designed. Similarly, *EAL* can be considered as an example of positive analysis (it explains how the legal system is), while *LE* is an example of normative analysis (it tells us how a legal system should be designed).

However, what about the *existing* economic theory that both *EAL* and *LE*, even if differently, are looking at? As observed by Calabresi in his book, *EAL* and *LE* do not refer to a particular theoretical setting. Clearly, economic behavior can be studied from different perspectives.

Many scholars, particularly in the Chicagoan (*EAL*) tradition, think that the main contribution of economic theory to the study of law is price theory (micro-economic theory) and the idea that people are rational actors and that they respond to incentives.

Even if there is not a unique definition of what the Rational Choice Theory is, the rationality assumption implies that individuals act to maximize their own self-interest. In this view of the world, price theory assigns to market prices the important role of conveying the information necessary to optimally allocate scarce resources among different alternatives, and wealth maximization becomes the efficiency criterium to be applied to identify the proper legal rules and, when necessary, to reform them.

Posner (1973), in his book “Economic Analysis of Law”<sup>33</sup>, showed his view of the relationship between the legal system and economics, which is as follows: the economic analysis of law postulates that all agents are rational maximizers of their satisfaction, that legal rules are interpreted as prices, assumed to be given (as in a competitive market sector) by agents when they choose the best (maximizing) response to the legal rules and that changes in legal rules can be interpreted as changes in constraints subject to which economic agents maximize their satisfaction. Finally, and not less important, on the basis of this view, the evaluation of legal rules depends on the efficiency<sup>34</sup> after effects they produce, and only the legal rules that

<sup>32</sup>Posner (2014) “Economic Analysis of Law”—9th edition—Walter Kluwer Law & Business, New York.

<sup>33</sup>Posner (1973) “Economic Analysis of Law”—Boston—Little, Brown and Company.

<sup>34</sup>Posner, see supranote 32, defines efficiency as follows: “it means exploiting economic resources in such a way that human satisfaction as measured by aggregated consumer willingness to pay for goods and services is maximized.”

produce greater wealth (wealth maximization's paradigm) should be chosen.

This “ideal” legal system, as postulated by Posner & Co., relies on some basic (and currently recognized not to be universal) economic assumptions, the most relevant of which is that all agents (consumers and producers) are rational and selfish.

## 5. Tragic Choices, Behavioral Law and Economics and the Calabresian “Reasoning”

The rationality assumption of the Chicagoan approach has always been, in some respect, appealing, simply because it implies the solution of “easy to assess” constrained or unconstrained maximization problems, borrowed from neoclassical economics and from the implied *rational choice theory* (*RCT*).

It is this ease of assessment that has overcome (or in some cases put aside) relevant issues such as the distributive and the equity issues.

In the past decades, the traditional rational choice model has been scrutinized and criticized by a new line of research named behavioral economics, whose exponents started noticing that individuals, when formulating their own decisions, such as consumption choices, do not always behave as the rational and self-interested “ideal” economic agent, but that their economic behavior departs from the one predicted by the traditional theory. However, what are these departures referring to? Additionally, what does Behavioral Economics add to Economic Theory and how it can be useful for Law? (Clarke & Kozinski, 2019)<sup>35</sup>. Camerer et al. (2004)<sup>36</sup> observe that “at the core of behavioral economics is the conviction that increasing the realism of the psychological underpinnings of economic analysis will improve the field of economics on its own term—generating theoretical insight, making better predictions of field phenomena, and suggesting better policy” and that this does not imply a complete rejection of the standard theory, “based on utility maximization, equilibrium and efficiency”. Many of the contributions of behavioral economics “modify one or two assumptions in standard theory in the direction of greater psychological realism”<sup>37</sup>. In other words, rephrasing the previous assertion following Calabresi’s “reasoning”, new researchers applied an interdisciplinary approach involving psychology (and neuroscience) as an external “Archimedean point”<sup>38</sup> from which the rationality assumption might be revisited and changed to provide a better explanation and prediction of real world human behavior. Behavioral economists used the insight from psychology “to explain why the real world did not fit existing economic models” and their effort definitely belongs to “the larger aim of capturing the interplay between the real world and theory”<sup>39</sup>, which is what Calabresi considers to be the “future agenda of

<sup>35</sup>Clarke & Kozinski (2019) Does law and economics help decide cases?. *Eur J Law Econ* **48**, 89-111. <https://doi.org/10.1007/s10657-019-09613-w>

<sup>36</sup>Camerer, Loewenstein, & Rabin (2004) “Advances in Behavioral Economics”—Chapter 1 “Behavioral Economics: Past, Present and Future” by Colin F. Camerer and George Loewenstein, page 3.

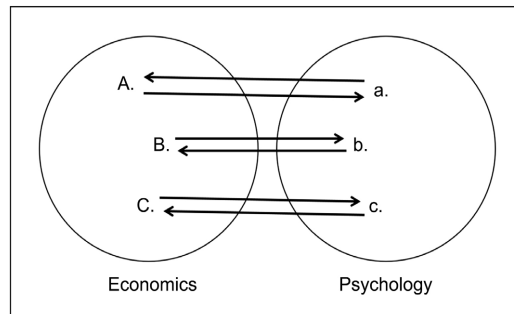
<sup>37</sup>See supranote 44.

<sup>38</sup>See supranote 2.

<sup>39</sup>See supra note 2—Note 9, page 178 (Notes to Pages 4-5).

Law and Economics”<sup>40</sup>.

If we translate Calabresi’s reasoning in terms of the Theory of Set and we apply it to behavioral economics (*BE*) (Zeiler, 2019)<sup>41</sup>, similarly to what we have done for law and economics (*LE*), we can think of *BE* as the result of the biunivocal relationship between Economics and Psychology developed by Herbert Simon, Daniel Kahneman, Amos Tversky and Richard Thaler<sup>42</sup>, recently awarded the Nobel Prize in Economics. I would like to emphasize the relevant fact that the relationship between Economics and Psychology is not unilateral, but it is bilateral (see Figure 5).



**Figure 5.** The relationship between Economics and Psychology is bilateral (see the bidirectional arrows from the set Economics and the set Psychology).

Behavioral economists have observed that traditional models are unable to fit in many of the real word situations and have asked themselves the “typical Calabresian question”, as follows: can we use some of the achievements of psychology to go back and change the traditional economic models slightly (e.g., the “bounded rationality” assumption by Simon, as we will observe soon) to be able to provide a better explanation of the real word? Such a connection between economic models and psychology enlarges the area of the two sets ET and LW so that the intersection between the two (the shaded area in Figure 6) will represent the common points of the two theoretical bodies. The enlargement of the *Economics SET* describes the enrichment that economic theory acquires from psychology to take into account real world phenomena that it was previously unable to explain. The early papers in Behavioral Economics apply a sort of recipe, stylized by Camerer et al. (2004)<sup>43</sup>, that resembles Calabresi’s “reasoning”, and they are mainly charac-

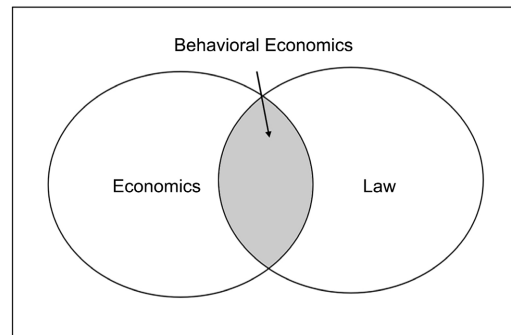
<sup>40</sup>See supra note 2.

<sup>41</sup>Zeiler (2019) Mistaken about mistakes. *Eur J Law Econ* 48, 9-27.  
<https://doi.org/10.1007/s10657-018-9596-5>

<sup>42</sup>See, for a summary, Thaler (2015). *Misbehaving: The making of behavioral economics*. Allen Lane.

<sup>43</sup>See supranote 44—Chapter 1, page 7: “Early papers established a recipe that many lines of research in behavioral economics have followed. First, identify normative assumptions or models that are ubiquitously used by economists, such as Bayesian updating, expected utility, and discounted utility. Second, identifies anomalies—i.e. demonstrate clear violation of the assumption or model, and painstakingly rule out alternatives explanations, such as subjects’ confusion or transactions costs. And third, use the anomalies as inspiration to create alternative theories that generalize existing models. A fourth step is to construct economic models of behavior using the behavioral assumption from the third step, derive fresh implications and test them”.

terized by the use of large amounts of data collected from experiments<sup>44</sup>.



**Figure 6.** Behavioral Economics can be represented, using Venn diagrams, by the shaded area obtained by the intersection between the set Economics and the set Law.

However, there is something more “universal” in Calabresi’s reasoning, and it deals with the making of science. Clearly, both law and economics (LE) and behavioral economics (BE) arise from the same methodological operation, summarized by the following figure, where LE and BE are in fact the result of the bilateral relationship between the respective fields.

Among the behavioral economists, *Simon (1955)* started observing, from empirical evidence, a relevant discrepancy between the “observed behavior processes in humans” leading to “substantial computational simplifications in the making of a choice”<sup>45</sup> and the predictions of the standard rational choice model<sup>46</sup>. This simple observation gave rise to what in the literature is known as the Theory of Bounded Rationality, that is, the human mind is bounded by “cognitive limits”<sup>47</sup> and has to be studied in relation to the environment where it has developed.

In his Nobel Prize Lecture, Simon pointed out that “We do know how the information processing system called Man, faced with complexity beyond his ken, uses his information processing capacities to seek out alternatives, to calculate consequences, to resolve uncertainties, and thereby—sometimes, not always—to

<sup>44</sup>See supranote 46—Chapter 1, page 7: “Experiments played a large role in the initial phase of behavioral economics, because experimental control is exceptionally helpful for distinguishing behavioral explanations from the standard ones”.

<sup>45</sup>*Simon (1955)* “A Behavioral Model of Rational Choice” — *The Quarterly Journal of Economics*, Vol. 69, No. 1. February, see page 104.

<sup>46</sup>See supranote 53, pages 99 and 100: “Broadly stated, the task (of this article) is to replace the global rationality of economic man with a kind of rational behavior that is compatible with the access to information and the computational capacities that are actually possessed by organisms, including man, in the kinds of environments in which such organisms exist. One is tempted to turn to the literature of psychology for the answer. Psychologists have certainly been concerned with rational behavior, particularly in their interest in the learning phenomena. But the distance is so great between our present psychological knowledge of the learning and choice processes and the kinds of knowledge needed for economic and administrative theory that a marking stone placed halfway might help travelers from both directions to keep to their courses”.

<sup>47</sup>As explained by *Faure (2008)* in the article “Calabresi and Behavioral Tort Law and Economics” — *Erasmus Law Review*—Volume 01, Issue 04, Calabresi was already aware of the presence of “cognitive limits” in human thinking and, in particular, in legal thinking.

find ways of action that are sufficient unto the day, that suffice.”<sup>48</sup> This simply means that in many different circumstances, individuals do not behave as purely rational actors, but given their cognitive limits, their behavior becomes “satisficing”<sup>49</sup> (they look for a satisfactory solution, even if it might not be the optimal one or the desired one).

To reduce the distance between the desired goal and the “good enough” solution, individuals tend to apply problem solving techniques, such as heuristic search, that are compatible with bounded rationality. However, the use of heuristics<sup>50</sup> as a problem solving technique, particularly in a complex decision making situation, can be difficult because it might give rise to systematic cognitive biases<sup>51</sup> (i.e., evaluation errors). The occurrence of systematic evaluation errors represents, as noticed by Kahneman (2003), one of the main criticisms<sup>52</sup> made by economists to the introduction of psychology in economic theory, not to mention the fact that behavioral economics fails “to offer a coherent alternative to the rational-agent model”<sup>53</sup>. However, without the insight from psychology, the economic model would also fail to provide explanations to many phenomena.

The ideas of Simon were deepened and carried forward by Amos Tversky and

<sup>48</sup>Simon (1978) “Rational Decision-Making in Business Organizations”—Nobel Memorial Lecture, 8 December, 1978.

<sup>49</sup>The word “Satisficing” used by Simon is the combination of two words: “satisfactory” and “suffice”.

<sup>50</sup>Shah and Oppenheimer (2008) “Psychological Bulletin” Vol. 134, No. 2, 207-222: see page 207 “Of- tentimes the word (*heuristic*) is cursorily defined as a ‘rule of thumb’ or a ‘mental shortcut’ for solving problems, but what does that mean?”... “Simon (1990), the father of heuristics research in judgment and decision making, argued that heuristics are ‘methods for arriving at satisfactory solutions with modest amounts of computation,’ suggesting that people seek to reduce the effort associated with decision processes (p. 11)” (Simon, 1990). Invariants of human behavior. *Annual Review of Psychology*, 41, 1-19. For the definition of “heuristic” see also the following: “A heuristics is any ‘rule of thumb’ or simple rule of behavior by which a person solves a problem. The shoppers can solve their problem of what cereal to buy with the heuristics, ‘buy what I usually do’. Almost all the economic decisions we make are based on such heuristics, otherwise life would get far too complicated.”—see page 33 of the book by Cartwright (2014) “Behavioral Economics”—second edition—Routledge Taylor and Francis Group, London and New York.

<sup>51</sup>Kahneman and Tversky (1996): “Theoretical notes—On the Reality of Cognitive Illusion” *Psychological Review*, Vol. 103, No. 3, 582-591: “These heuristics, we argued, are often useful but they sometimes lead to characteristic errors or biases, which we and others have studied in some detail. There are several reasons for studying judgmental or perceptual biases. First, they are of interest in their own right. Second, they can have practical implications (e.g., to clinical judgment or intuitive forecasting). Third, the study of systematic error can illuminate the psychological processes that underlie perception and judgment. Indeed, a common method to demonstrate that a particular variable affects a judgment is to establish a correlation between that variable and the judgment, holding the objective criterion constant. For example, the effect of aerial perspective on apparent distance is confirmed by the observation that the same mountain appears closer on a clear than on a hazy day”.

<sup>52</sup>Kahneman (2003) “Maps of Bounded Rationality: Psychology for Behavioral Economics”—The American Economics Review (1449-1475). See page 1449: “Economists often criticize psychological research for its propensity to generate lists of errors and biases, and for its failure to offer a coherent alternative to the rational-agent model. This complaint is only partly justified: psychological theories of intuitive thinking cannot match the elegance and precision of formal normative models of belief and choice, but this is just another way of saying that rational models are psychologically unrealistic. Furthermore, the alternative to simple and precise models is not chaos. Psychology offers integrative concepts and mid-level generalizations, which gain credibility from their ability to explain ostensibly different phenomena in diverse domains”.

<sup>53</sup>See supranote 60.

Daniel Kahneman, authors of a series of papers<sup>54</sup>. In their renown article “Prospect Theory: an analysis of decision under risk”<sup>55</sup> (1979) they present a “critique of expected utility theory as a descriptive model of decision making under risk, and develop an alternative model, called prospect theory”<sup>56</sup>. Tversky and Kahneman considered a series of experiments to show that decisions under uncertainty are not always optimal and that the individuals’ decisions of taking or not taking a risk are “context dependent”<sup>57</sup>.

A similar “reasoning” (chronologically antecedent to the one of Tversky and Kahneman) can be found, for example, in the discussion of the “sufficiency paradox”<sup>58</sup> that Calabresi and Bobbit (1978) offer in their worldwide renown book “Tragic Choices”<sup>59</sup>. Even if it is unthinkable to carry out experiments on the tragic events that unfortunately occur in life from time to time, it is possible to note that certain tragic choices, such as investing large sums to save a small group of miners trapped in the bowels of the earth, rather than investing a smaller sum in security systems that could save more lives of miners in the future, fall into the type of reasoning proposed by Tversky and Kahneman, and it is definitely “context dependent”. If that small group of individuals were not trapped in the mine, would the mine owner be so eager to spend money on a security system to prevent those people from being trapped in the mine in the future? The answer relies on two different observations: first, saving people in peril is a strong affirmation of the principle of the “pricelessness of life”, and second, it does seem to have “external benefits”. In contrast, investing large amounts of money in security system that could prevent future problems does not have any “external benefit”. There is a sort of low substitutability degree between “security systems” (i.e., measures that potentially might save lives in the future) and the “external benefits” deriving from the speculation of a striking event.

<sup>54</sup>Kahneman and Tversky (1973) On the psychology of prediction. *Psychological Review*. 80, 237-251. Kahneman and Tversky (1974) “Judgment under Uncertainty: Heuristics and Biases” *Science*, New Series, Vol. 185, No. 4157, pp. 1124-1131. Kahneman & Tversky (1979). Intuitive prediction: Biases and corrective procedures. *TIMS Studies in Management Science*. 12. 313-327. Kahneman, Slovic, & Tversky (1982). *Judgment under uncertainty: Heuristics and biases*. Cambridge, England: Cambridge University. Kahneman & Tversky (1982a). On the study of statistical intuitions. *Cognition*, 11, 123-141. Kahneman & Tversky (1982b). Variants of uncertainty. *Cognition*, 11, 143-157.

<sup>55</sup>Kahneman & Tversky (1979) “Prospect Theory: An Analysis of Decision under Risk” *Econometrica*, Vol. 47, No. 2. (Mar., 1979), pp. 263-292.

<sup>56</sup>See the Abstract of supranote 63.

<sup>57</sup>In their (1979) article, see supranote 63, Kahneman and Tversky showed that “losses loom larger than gains”, introducing the important notion of “loss aversion”.

<sup>58</sup>See supranote 2—page 5. Using the description given by Professor Calabresi in his book “The Future of law and Economics”, as follows: “To pick just one example, the discussion in that book (Tragic Choices) of the ‘sufficiency paradox’ might, if written today, be viewed as a paradigmatic example of behavioral-economics scholarship. As we there explained, the paradox consist in the willingness of society to spend much more to save a person in dramatic peril than to avoid recurrent disasters that kill far more people, precisely because doing so serves to assert the ‘pricelessness of life’, and because not doing so would dramatically negate that pricelessness, especially in the face of so many other decisions that, albeit less conspicuously, price life in ways that we find morally repugnant”.

<sup>59</sup>See supranote 2. In their book, Calabresi, together with Bobbit, study different devices, such as traditional markets, lotteries, nontraditional markets, markets that are neutral in their impact on the distribution of wealth, and other methods to allocate tragically scarce resources.



The previous examples show that both Calabresi and Tversky and Kahneman use a combination of at least two disciplines, including economics, to “explain the world as it actually is”<sup>60</sup>.

This is also the case of behavioral law and economics (*BLE*), which combines three disciplines, i.e., law, economics and psychology, to study the legal and policy implications of cognitive biases. The new field was officially recognized after the publication of the two seminal articles by Jolls, Sunstein and Thaler (1998) and Korobkin and Ulen (2000), i.e., “A Behavioral Approach to Law and Economics” and “Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics,” respectively.<sup>61</sup> Even if the work (for example, the so called “endowment effect”) by Thaler<sup>62</sup>, who was a behavioral-economist, was extremely relevant to the rise of BLE as an independent discipline, the intellectual forefathers of *BLE* were Tversky and Kahneman, with their research on heuristics and biases. If we now apply the Calabresian “reasoning” to *BLE*, using the insight offered by the Theory of Sets, we can easily argue the following:

- BLE is the intersection of the three different abovementioned sets (fields of study—see the gray area in **Figure 7**), i.e., economics, psychology and law;
- on the basis of the theory of sets, if we apply the so called “associative law” (see the **Appendix**, where it is stated that given three sets A, B and C, we can take the intersection of any two of them and the resulting intersection with the third set), we obtain the set BLE;
- the set BLE is the intersection between the law and economics set (that is itself the intersection of the sets Economics and Law) and the psychology set.

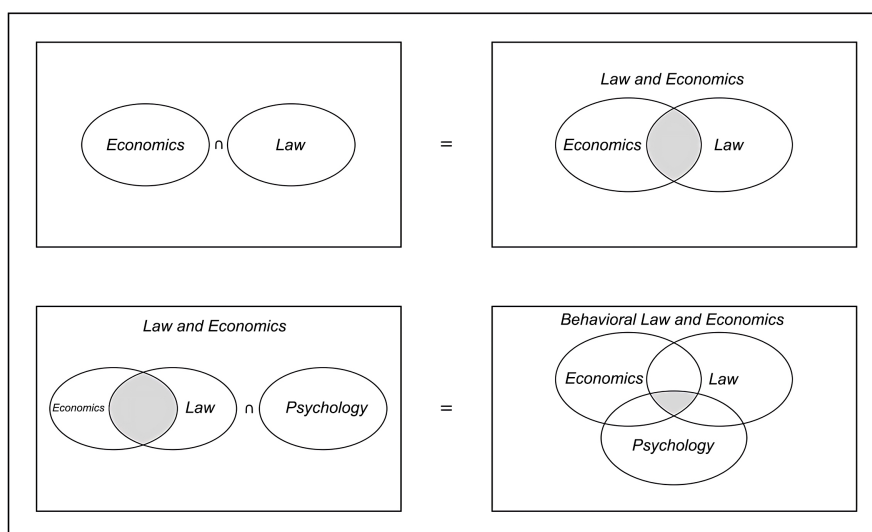
This result well correspond to what Calabresi (2016) observed in “The Future of Law and Economics”, i.e., “there may be times when a combination of various disciplines, including economics, will be needed to explain the world as it actually is”.

From this perspective, we can easily consider Judge Guido Calabresi not only the founding father of law and economics but also the forefather of many other theories and, among them, of behavioral law and economics. There are many examples in the history of economic theory of debates regarding whether relevant ideas had forefathers, and an example of that is the Nash Equilibrium and the notion of equilibrium of Cournot in the case of an oligopoly.

<sup>60</sup>See supranote 2, page 6.

<sup>61</sup>Korobkin and Ulen (2000) “Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics”, 88 CALIF. L. REV. 1051. Additionally, Jolls, Sunstein, & Thaler (1998) “A Behavioral Approach to Law and Economics”, 50 STAN. L. REV. 1471.

<sup>62</sup>Thaler (1985): “Mental accounting and consumer choice. *Marketing Science*, 4(3), 199-214.”, Thaler (1999). “Mental accounting matters”. *Journal of Behavioral Decision Making*, 12, 183-206 and Thaler (2015). “*Misbehaving: The making of behavioral economics*”. New York: W. W. Norton & Company. Thaler (1996) “Doing Economics Without Homo Economicus”, in Foundations of Research in Economics: How Do Economists Do Economics?, ed. Steven G. Medema and Warren J. Samuels, 227-37 (Brookfield, VT: Edward Elgar Publishing Company). Thaler (1980) “Toward A Positive Theory of Consumer Choice”—*Journal of Economic Behavior and Organization*, 1: 39-60. Calabresi and Dawes (1992) “Cooperation”, in Richard H. Thaler, *The Winner’s Curse: Paradoxes and Anomalies of Economic Life*, 6-20—New York: The Free Press.



**Figure 7.** The intersection between Economics and Law gives rise to the field of Law and Economics. Similarly the intersection between Law and Economics and Psychology gives rise to the field named Behavioral Law and Economics.

As [Streb \(2015\)](#) notices in his article “Nash’s interpretations of equilibrium: Solving the objections to Cournot”, “Nash mentions Cournot in a study on bilateral negotiation published as [Nash \(1950\)](#)”, but many authors, and among them [Kuhn \(1996\)](#), are convinced that Nash did not read Cournot’s work. Streb continues his thoughts asserting that “the main objection that [Myerson \(1999\)](#) has for crediting [Cournot \(1838\)](#) with the equilibrium concept for non cooperative games is that this would confound the application of a methodology with its general formulation. [Myerson \(1999\)](#) concludes that Nash’s non cooperative game theory gives the general framework to analyze, from the point of view of rational decision-makers, social problems beyond the sphere of markets. In other words, beyond the sphere of [Cournot \(1838\)](#). These observations are absolutely correct, but they do not imply that Cournot cannot be given partial credit for contributing to the essential solution concept in game theory.”

Going back to BE and BLE, we can observe that behavioral-economists and behavioral law economists can, in fact, be easily considered to act as empiricists, as lawyers do, in their field; they study the world as it is and if they realize that some of the economic decisions taken by the relevant agents cannot be explained through the standard axiomatic (neoclassical) theory, they do not presume that those decisions are irrelevant or inexplicable, but they borrow some ideas from another discipline, i.e., psychology, for example, heuristics and biases in the style of Tversky and Kahneman; then, they go back and they apply those ideas to economics, changing the existing theory to take into accounts those decisions (previously inexplicable) that now become explicable. The result of this graft is Behavioral Economics.

If we now apply Behavioral Economics to Law (see also [Leeson, 2019](#)), we can study the legal system with an additional tool that is an insight from cognitive

psychology.

However, this way of “creating a new field of study through the intersection of two or more already existing fields of study” was invented by Calabresi, giving birth to law and economics.

Why then should we not recognize him, the father of Law and Economics’, as the main inspiration, i.e., the forefather, of all other “science and any another science”?

If “economic modeling led legal scholars to see the real world more clearly”, the future agenda of law and economics, as stated by Calabresi, is the study of the interplay between the real world as it is and theory, and BLE is an example of it. The new book “The Future of Law and Economics” by Calabresi not only provides us with insight on what is going on in law and economics, but it also represents a starting point for new and more extensive research.

## Acknowledgements

I would like to express my deep and sincere gratitude to Professor Guido Calabresi for the inspirational conversation we had on the article. All errors remain mine.

## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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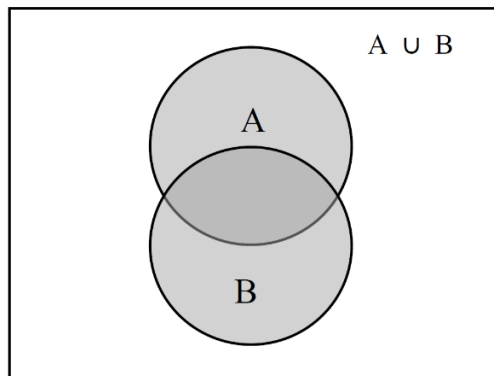
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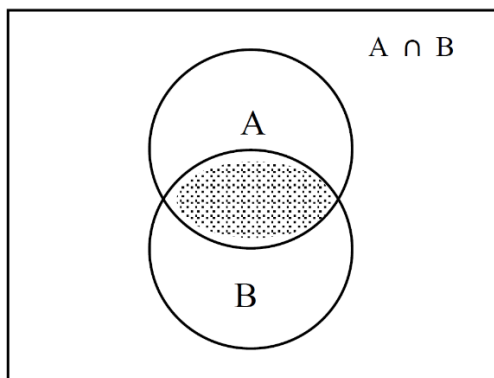
## Appendix: Some Fundamental Notions of the Theory of Set

A set is a collection of distinct objects (that may be a group of distinct numbers or something else). For our analysis, two operations on sets are relevant, as follows: union and intersection.

**Union:** to take the union of two sets means to consider a new set containing those elements, and only those elements, belonging to A, to B and to both A and B. The union is indicated through the symbol  $\cup$ . See the following figure:



**Intersection:** The intersection of two sets consists of a new set that contains those elements, and only those elements, belonging to both A and B. The intersection is indicated through the symbol  $\cap$ .



We can also consider the intersection between three sets A, B and C (in this case the so called associative law holds, i.e., we can take the intersection of any two sets and the resulting intersection with the third set).