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The Person in Law, The Number in Math: Improved Analysis of the Subject as Foundation for a Nouveau Régime

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THE PERSON IN LAW, THE NUMBER IN MATH: IMPROVED ANALYSIS OF THE SUBJECT AS FOUNDATION FOR A *NOUVEAU RÉGIME*

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I. INTRODUCTION

In keeping with the theme of the LatCrit XIV Conference, “*Outsiders Inside: Critical Outsider Theory and Praxis in the Policymaking of the New American Regime*,” I present a mathematically inspired critique of legal analysis and propose importing the number system into the legal

conception of the person. My approach substitutes the prevailing definitions of natural and artificial persons that pervade the empire of the law¹ with numerical analysis. Once the law uses a number analysis to define conceptions of the person, a new set of building blocks is needed to audit legal analysis. This will empower the *Nouveau Régime* to audit² “insiders” and “outsiders” theories as well as praxis and policymaking in the justice system.

My proposal is a “thought-piece” outlining the foundations of my research program. I do not have all the answers to this “thought-piece,” but I am offering a new perspective to the study and analysis of law. I hope that it can be a guide for others who will improve on and promote it. The structure of this proposal integrates questions, hypothesis, predictions, observation, experiments, and final statements, all basic elements of the scientific method.

These elements of the scientific method are not rigorously followed in law as done in traditional scientific fields because the justice system has not yet adopted a standard scientific protocol. In the absence of juridical scientific protocol I will include the basic elements without attempting to ignore the particular complexity of the justice system by following a protocol of another field. I will refer to “insider/outsider,” audit and *Régime* in accordance to the definitions I now develop.

First, by “outsiders” I refer to critical outsider scholarship, LatCritical values, including internationalism and global-mindedness, the valorization of human rights and multidimensional diversity, the centrality of antidiscrimination work, a commitment to rigorous interrogation of longstanding dominant assumptions and norms, and a preference for discourse and dialogue over militarism. All are characteristics shared by President Barack H. Obama as a biracial former law professor with working class and immigrant roots and an international and multicultural upbringing.

Second, by “audit” within the context of the justice system, I borrow from its traditional development in accounting, in which a natural or juridical person is financially evaluated procedurally and substantively using quantitative and qualitative methods to ascertain the validity and reliability of its information, as well as an assessment of internal control. I support expanding the scope of an audit to the local and global security matters the justice system addresses, such as, risks to life, property and liberty. At the present, the justice system has not implemented any official

1. See generally RONALD DWORKIN, *LAWS’S EMPIRE* (1986).

2. BLACK’S LAW DICTIONARY WITH PRONUNCIATIONS 131 (6th ed. 1990) (identifying an audit as the “systematic inspection of accounting records involving analyses, tests, and confirmations”).

and formal external/independent and/or internal auditing mechanism that may verify the effectiveness of the quality of the justice system. I propose a conceptualization of audit that also borrows from “quality audits” to verify the existence of objective evidence to assess the success of processes in the justice system and in the achievement of fundamental rights. I hope the product of this type of audit reports irregularities as well as suggests corrective trends by highlighting areas of good practice. An ambitious but essential subject of analysis of audits in the justice system should be the exercise of discretion in the analysis of facts and in the interpretation of the law at all levels: from the particular natural and/or juridical persons involved in a conflict; to all types of law enforcers involved, such as: police and administrative officials, governmental and private attorneys’ in their respective roles; law and rule makers, such as: legislators and agency directors; and adjudicators, such as: judges of the judicial branch and quasi-judicial administrative agencies of all levels at federal and state level.

Third, by “*Régime*” I refer to the form of government—the set of rules, cultural or social norms, that regulates the operation of government and its interactions with society as may be developed by the “outsiders” that have become “insiders,” such as can be epitomized in the aspirations and promises of President Barack H. Obama’s campaign.

After presenting this mathematical critique and proposal, I hope the reader will acquire a new perspective on how the search for auditing methods will enable us all, both “insiders” and “outsiders,” to measure the execution of the justice system with more reliability than in the present *Régime*.

As Dean Claudio Grossman of The American University Washington College of Law stated regarding the force of an audit during the closing reception of the LatCrit XIV Conference, “auditing is like pregnancy; you can’t have a 5% pregnancy; either you’re pregnant or you’re not.”

II. CONDITIONS CREATING NEED FOR THIS MODEL: OBSERVATIONS, QUESTIONS AND HYPOTHESIS

A. From Leibniz to Modern Science: Parameters for a Theory of Legal Analysis

This new perspective follows in the steps of Gottfried Wilhelm Leibniz (1646-1716), a jurist who created calculus in his journey towards universal truth for solving disputes. I believe that if Leibniz lived today he would be surprised to see that, three centuries after his death, legal analysis has failed to incorporate his contributions and remains in a similar state in which he left it. During the 1900s, jurists failed to make substantial mathematical contributions to the analysis of law that serves “insiders” and “outsiders”

directly. It has been non-jurists such as Gary S. Becker and Ronald H. Coase, both Nobel Prize winners, who have made leaps in furthering the legacy of Leibniz through their economic and mathematical applications to legal analysis and the justice system.³

I suggest we honor Leibniz's legacy and continue the application of the mathematical approach to conflict. Mathematical contributions do not clearly carry the imprint of their author, whereas works of art, similar to the jurisprudence of a particular court or judge, are distinctly marked by the style and individuality of the artist. Mathematicians from different places, times, and systems, working sometimes with different methods of proof, get the same results and arrive at the same theorems. Mathematics possesses an objective character that is dissociated from a scientist making discoveries, unlike artistic or literary works, which are subjective and reflect the personalities of their creators. The objective nature of mathematics more easily leads to teamwork, whereas it is generally harder for two or more people to collaborate on a painting, novel, or legal dispute.

Jurists fail to understand that if one of our basic duties is to measure and determine, at different stages, the likelihood of actions or omissions of persons and their effects, then determination of likelihood in turn will require measurement, and measurements require numbers. How can society audit the justice system and the abilities of its agents to make determinations of fault in prosecuting criminal cases or pursuing civil actions if they are deficient in math and lack external methods of measurement and analysis?

The Critical Legal Studies ("CLS") movement and its progeny identified weaknesses of the justice system that perpetuate patterns of subordination and exclusion of "outsiders."⁴ As "outsiders" we can perceive that the actual *Régime* has weaknesses that are the product of the pseudoscientific nature of a justice system that promotes exclusion of "outsiders." This pseudoscientific nature creates complexities through high entropy, noise, and chaos which make it easier for the *Régime* to perpetuate a justice system that preaches independence as an autonomous science and promotes patterns of subordination.

Oliver Wendell Holmes, writing in the late nineteenth century, was one of the first American legal scholars to highlight the detrimental effects of a

3. See, e.g., GARY S. BECKER, *THE ECONOMICS OF DISCRIMINATION* (2d ed. 1971) (analyzing the effects of race, sex, and social class, among other factors, on the marketplace); see also Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960) (sparking the theories of Law and Economics, which have lead to new perspectives in legal analysis that rely on math).

4. See, e.g., Francisco Valdes, *Legal Reform and Social Justice, An Introduction to LatCrit Theory, Praxis and Community*, 14 GRIFFITH L. REV. 148 (2005) (defining concepts such as "outsider perspective," "substantive security," "patterns of subordination," and "multidimensional" within the evolution of LatCrit Theory).

pseudoscientific justice system. Holmes publicly emphasized a pragmatic legal analysis in his book *The Common Law*, through his famous phrase, “[t]he life of the law has not been logic; it has been experience.”⁵ In his address, *The Path of the Law*, Holmes indicated that the jurist should rely on personal experience while navigating in the justice system, or view the system from what he called the “bad man” perspective.⁶ Jurists who navigate the justice system often end up relying on their experience and not the black letter law; those who do not have the sensibility to recognize the reality of the system and do not rely on their experience, struggle and fail to excel.

Finding a solution to the weaknesses revealed by Holmes and subsequently developed by “legal realists,” extends to the highest level of our justice system. Both Justice Stephen Breyer and Justice Antonin Scalia of the United States Supreme Court acknowledge this crisis and propose forms of analysis that aspire to show the path for equitable distribution and opportunities for “outsiders.”⁷ However, these justices, like those of various critical legal scholars and other jurists have a similar problem: they fail to recognize that they are children of a pseudoscience. As children of a pseudoscience, they are victims of processes that impair their openness to mathematical contributions, such as audits, in legal analysis under a *Nouveau Régime*. Jurists of the past were more interdisciplinary but had another limitation: they did not have the benefit of modern sciences. The contributions of modern sciences, such as complexity theory, have made it possible to surpass many of the hurdles classical science presented.

Modern science within our context begins with Albert Einstein’s (1879-1955) introduction of the Theory of Relativity in 1905, upon which Werner Heisenberg (1901-1976) developed his “uncertainty principle” governing the subatomic world and the foundations of quantum mechanics, which were also being entertained by a cluster of scientists.⁸ These contributions undermined the certainty of absolute space and time that Isaac Newton

5. OLIVER WENDELL HOLMES, JR., *THE COMMON LAW* 1 (Am. Bar Ass’n 1963) (1881).

6. See Justice Oliver Wendall Holmes, Supreme Judicial Court of Mass., at the dedication of the new hall of the Boston University School of Law: *The Path of the Law* (Jan. 8, 1897), in 10 HARV. L. REV. 457, 459 (1897) (arguing that “bad men” should only care about the material consequences of actions).

7. See STEPHEN BREYER, *ACTIVE LIBERTY* 116 (2005) (highlighting the fear that judges, in justifying legal conclusions with reference to real-world consequences, might act subjectively and undemocratically); ANTONIN SCALIA, *A MATTER OF INTERPRETATION* 14 (1997) (lamenting the lack of an intelligible theory of statutory interpretation through which judges may view each case).

8. The international group of physicists that helped develop these concepts in the 1920s included: Niels Bohr from Denmark, Louis De Broglie from France, Erwin Schrodinger and Wolfgang Pauli from Austria, Werner Heisenberg from Germany, and Paul Dirac from England.

(1642-1727) and Pierre-Simon De Laplace (1749-1827) idealized under their mechanistic view of nature's unconditional determinism. Because of these contributions, science is no longer exact, and the scientific community has had to recognize that most of their explanations for future events will depend on recognition of general patterns and probabilities. As such, they have modified their language. For example, established scientific principles traditionally referred to as "laws" are now referred to as "theories."⁹

This new rationality was reinforced in the field of mathematics by the contribution of Kurt Gödel (1906-1978). Gödel developed the "incompleteness theorem," also known as "Gödel's Proof" or "Gödel's Theorem." Gödel's Incompleteness Theorem states that a consistent and non-contradictory arithmetical system invariably contains "undecidable" propositions—mathematical statements of which we can never determine to be true or false. We cannot prove that a system is consistent and non-contradictory solely on the basis of the axioms contained within that system; this can only be done by stepping out of the system and imposing additional external axioms. In this sense, the system is incomplete by itself. Hence, total truth cannot be contained within a finite system;¹⁰ therefore, any finite system is by nature incomplete. This "incompleteness theory" implies that rational thought has inherent limitations and cannot attain absolute truth.¹¹

Einstein's Theory of Relativity, Heisenberg's Uncertainty Principle, and Gödel's Incompleteness Theorem established a new era in which any model of natural phenomena would appear inherently relative, uncertain, and incomplete (together "RUI parameters"). The impact of the RUI parameters in all analysis will vary in accordance to the micro or macro, basic or complex, scale of the phenomena under study. Hence, the best we can do in all fields of knowledge and analysis, including the law, is to identify connections, patterns, and trends, recognizing they will never be static, certain, or complete. In other words, one hundred percent exactness is a fallacy. These three main contributions had been elusive throughout different fields of knowledge, and it was the use of math that helped each of these great scholars to make outstanding contributions in the

9. See FRITJOF CAPRA, *THE TAO OF PHYSICS* 41 (4th ed. 2000) (noting that all models and theories are approximate and not completely certain); JAMES GLEICK, *CHAOS: MAKING A NEW SCIENCE* 3 (1987) (explaining that chaos theory originates from where the laws of nature end and fail to explain the randomness events seen in many areas of the physical universe).

10. See ERNEST NAGEL & JAMES R. NEWMAN, *GÖDEL'S PROOF* 86 (1958) (declaring that arithmetic axioms are incomplete and that all arithmetical truths cannot be deducted from axioms).

11. *Id.*

understanding of ourselves, and our environment.

With these three fundamental RUI parameters, I invite you on a brief exploratory journey of how the existing *Régime* of legal analysis in the justice system exploits these limitations in favor of “insiders.” Under a *Nouveau Régime*, we can apply math as Einstein, Heisenberg, and Gödel did in their respective fields, and discover connections, trends, and patterns in the dynamics of nature. This proposal for a *Nouveau Régime* seeks to discover such connections, trends, and patterns in the dynamics of legal analysis in the justice system.

Therefore, by implementing basic mathematical elements in legal analysis we will generate data for auditing the justice system and its role in the flow of “insiders” and “outsiders,” as well as any of the infinite amounts of classes that may be rising or falling. Auditing will help us understand the spatial and temporal dynamic of the *Régime* and will make us aware of its trajectory and force in order to get ready for it, just like when a meteorologist helps us understand the spatial and temporal dynamics of an atmospheric event. When a meteorologist tries to forecast the flow in time and space of atmospheric clusters, such as storms and hurricanes, she uses math as a tool to model the trajectory and power of this phenomena, to allow all in its path a chance to plan ahead to mitigate losses. However, in order to reach this goal we must surpass the hurdle that the pseudoscientific nature of the justice system presents.

B. A View of the Justice System: Pseudoscience and Scientism

Pseudoscience is any body of knowledge, methodology, or practice erroneously considered scientific. The definition and characteristics of a pseudoscience in first instant may be implicitly attributed to Johannes Kepler (considered by many to be the first astronomer) and Galileo Galilei, but Sir Karl Raimund Popper (1902-1994) originally established it during the 1950s. More recent scholars, such as Philip Kitcher (1947-), define it by its motives and methodologies, instead of the content of its theories.¹² In other words, it is not the doctrine itself, it is how the doctrine justifies and perpetuates “insider” status.

However, the characteristics used for the demarcation exercise presented in the present paper could not be attributed to any single person, since there are many persons that have reiterated and adapted to their fields the list of characteristics that make a field more reliable and legitimate without citing

12. See Robert MacDougall, *Strange Enthusiasms: A Brief History of American Pseudoscience*, 3.4 21STC, (Winter 1999), available at <http://www.columbia.edu/cu/21stC/issue-3.4/macdougall.html> (noting that Kitcher felt that pseudoscience thrives because it is quick to appeal to the democratic sensibilities of people, rather than letting the theory be judged on its merits).

any source or expressing any claim of authorship or copyright. Thus, I am unable to credit any particular person with sole authority.

A pseudoscience cannot comply with the criteria of a science and the lists of characteristics are neither exclusive nor conclusive independently of each other; however, the more characteristics present in a field of study, the more suspicious one should be when considering it.¹³ For example, pseudosciences that enjoy vitality, acceptance, and, in some cases, renewed interest within popular culture, are astrology, witchcraft, and parapsychology (study of UFOs). My claim is that legal analysis in the present *Régime* is nothing more than a pseudoscience.

Society confronts substantial risks when the system accepts pseudoscience norms without critique, as seen in the field of certain modalities of alternative medicine. Sick people visit these pseudoscientific healers and frequently leave erroneously convinced they were healed. The mind is very powerful in achieving health, but this is no justification for misleading patients into neglecting legitimate medical treatment. When these patients later discover they were not truly healed, their condition may have already worsened to the extent that modern medical treatment is often ineffective. Today, legal analysis within the justice system produces similar results, in that it generates the appearance of effective justice, when in reality it is a system immune from standard auditing actively promoting confusion and arbitrariness that furthers the preferences of “insiders.”

Governments, industries, and other interest groups use pseudoscience to push their particular agendas and to confer a sense of legitimacy. The U.S. government through its Legislative Branch generates law; through its Executive Branch generates Presidential Orders, treaties, and regulations; and through its Judiciary Branch generates jurisprudence. Most of its members are “insiders” promoting pseudo-scientific ideas of self-preservation that they pass onto the population at large, the “outsiders.” Policy formulated in this fashion is generally insulated from criticism, even

13. Professionals of different branches of knowledge have made their own list of characteristics with slight adaptations relative to their fields; however, they all essentially propose the same. See DANIEL R. ALTSCHULER ET. AL., *CIENCIA, PSEUDOCIENCIA Y EDUCACIÓN* (Callejón Editions ed., 2004); ROBERT L. PARK, *VOODOO SCIENCE* (2000); CARL SAGAN, *THE DEMON-HAUNTED WORLD* (1996); MICHAEL SHERMER, *WHY PEOPLE BELIEVE WEIRD THINGS* (2002); M. Bunge, *What is Pseudoscience?*, 9 *SKEPTICAL INQUIRER* 36 (1984); William F. McComas, *Ten Myths of Science: Reexamining What We Think We Know* . . . , 96 *SCH. SCI. & MATH* 10 (1996), available at http://bluffton.edu/~bergerd/NSC_111/TenMyths.html; Larry Orcutt, *Bad Science or, Some Lists Useful in Dealing With Questionable Science*, CATCHPENNY MYSTERIES OF ANCIENT EGYPT EXPLAINED, <http://www.catchpenny.org/patho.html> (last visited May 27, 2010); see also Keith Abney, *Naturalism and Nonteological Science: A Way to Resolve the Demarcation Problem Between Science and Non-Science*, 48 *PSCF* 162 (September 1997), available at <http://www.asa3.org/ASA/topics/Philosophy/PSCF9-97Abney.html> (noting that some of these characteristics include independent testability, unification, and fecundity).

if there are minor exceptions. If we permit such policy insulation and immunity, then the “insiders” policy becomes impossible to falsify, as it does not accept conditions that may debilitate it, nor external facts that refute it. The immunity generated by a pseudoscience bares an unreasonable risk: when promoted in the political system, it has justified atrocities in the name of racial purity and national security; when promoted in fields of study, it has eliminated legitimate methods of study and reduced sensibility.¹⁴ If the justice system keeps following trends of a pseudoscience to seek immunity from criticism, we will experience unbearable levels of disparity and deprivation of fundamental rights.

The classification of a field within a science or a pseudoscience involves ethical and political implications that touch existing institutions,¹⁵ and intellectuals familiar with the importance of demarcating the different existing fields differ as to which fields are pseudoscience, while people that ignore the importance of demarcation rarely distinguish between a field that is scientific or pseudoscientific.¹⁶

I now develop three characteristics used to help identify and demarcate a field as pseudoscience to the justice system, as follows:

1. Legislators, executives, and jurists formulate laws, rules, and jurisprudence without a scientific methodology but co-opt the image of using one.¹⁷ On occasion, they pre-select the science they consider relevant to justify their objectives while excluding the science that contradicts them. Jurists do the same when they prejudice data as “correct” based on their interest in their exercise of credibility and interpretation of the law ignoring

14. See generally JOHN CORNWELL, *HITLER’S SCIENTISTS: SCIENCE, WAR AND THE DEVIL’S PACT* (2003) (examining the ethical, political, and scientific reasons behind the choices of scientists in Hitler’s Germany).

15. See generally IRME LAKATOS, *THE METHODOLOGY OF SCIENTIFIC RESEARCH PROGRAMMES* (John Worarall & Gregory Currie eds., 1978) (outlining the relative perspectives of the “demarcation problem” in the philosophy and history of science, especially the problem normative methodology has with distinguishing a science from a pseudoscience).

16. A pseudoscience distinguishes from revelation, theology or spirituality by claiming understanding, shrewdness, and legitimacy in the world through scientific methods. Systems that rely on divine and inspirational thought are not pseudoscientific if they do not attempt to be scientific or replace well-established scientific principles. Hence, we do not demarcate as a pseudoscience religious practices based on faith to the extent they do not proclaim legitimacy on science and its methods to increase the number of followers and members.

17. See Nancy Levit, *Listening to Tribal Legends: An Essay of Law and the Scientific Method*, 58 *FORDHAM L. REV.* 263, 266 (1989) (suggesting that attention to the principles of scientific inquiry is one method of improving the validity of legal decisions and theories); John Veilleux, *The Scientific Model in Law*, 75 *GEO. L.J.* 1967 (1987) (investigating the usefulness and validity of a scientific approach to legal analysis); Vittorio Villa, *Legal Science Between Natural and Human Sciences*, 4 *LEGAL STUD.* 243, 243-44 (1984) (discussing the scientific method and its application and interpretation in the field of law).

all other data that contradicts their determination. Since facts and law have the potential of infinite amount of interpretations under the present legal analysis, they avoid verification and falsifiability. For example, one party may present twenty witnesses and the other two, but the judge may determine not to give credibility to the twenty and instead credit to the other two based on her personal assessment. Nevertheless, the jurist that presented the twenty witnesses may have genuinely given credibility to all of them based on different criteria. What is the standard criterion to give more weight to one witness over twenty, or to give twenty witnesses more weight over one witness? What are the standard guidelines and instructions for a witnesses' demeanor to be measured and adjudicated? Does it all rely on a hunch?

2. The justice system develops processes guided toward favoring a product "x" or a position "y."¹⁸ If we present an issue before two jurists, we may have completely different and incompatible results at all levels of the system. People cannot rely on the black letter law alone to provide a remedy to their problems¹⁹ while failing to measure what degree of entropy is optimal and convenient within the justice system. To illustrate this notion, imagine we take a copy of the Puerto Rico Civil Code, 1984 Edition, which consists of 947 doubled-sided pages without appendix. If we unbind that Code and throw all the 947 pages in the air, and then gather the loose sheets into a neat pile and examine the stack, you will notice that the pages will be enormously more likely out of order than in order. We all have a hunch for this. There are many ways in which the order of the pages can be jumbled, but only one way for the order to be in the original precise sequence. To be in order, of course, the pages must be arranged precisely as one, two, three, four, five, six . . . up to 947. Any other arrangement is out of order. A simple but essential observation is that, all else being equal, the more ways something can happen, the more likely it is that it will happen. And if something can happen in enormously more ways, like the pages landing in the wrong numerical order, it is enormously more likely that it will happen.²⁰ Similarly, the more jurists, facts, and norms we have

18. See Frederick Seitz, *The Present Danger to Science and Society*, 1995 COSMOS J. 2, available at <http://www.cosmos-club.org/web/journals/1995/seitz/html> (arguing that modern science is not a pursuit of knowledge but rather a system of ambiguous ideals devised by a group of insiders who use them to further their own individual goals at the expense of society).

19. The decline of law's autonomy with the boom of disciplines that are complementary to law, particularly economics and philosophy. See generally Richard A. Posner, *The Decline of Law as an Autonomous Discipline: 1962-1987*, 100 HARV. L. REV. 767 (1987).

20. Orlando I. Martínez-García, *It's Time for a Change . . . Reduction of Entropy in Legislative Branch Through: Unicameralism, Caps and Methods*, LEY & FORO, 10 Num. 2 (2007).

involved in a conflict the more entropy and chaos we have.

3. The justice system seeks legitimacy through history and quantity. For example, if expressed in the Constitution, stated by a founding father or mother, or a prestigious person, people assume that it must be legitimate. If others ratify or reiterate the expression on multiple occasions, such as lawyers and judges do with jurisprudence, then it must be legitimate (quantity over quality). The system may perpetuate a false or illegitimate purpose if an important person said it a long time ago and others repeated it later. This is precisely the problem with the school of interpretation known as Originalism, which in constitutional law consists on the claim that the text of the Constitution and the original intent of the framers ought to control constitutional interpretation.²¹ This sense of antiquity and reiteration is then supported with symbols of authority, such as a judge's dress code making them look as supernatural with their gowns, reinforced through the structure and organization of the courtrooms, which, on many occasions, are similar to those of the church and ancient temple.²²

These characteristics show the path for further analysis in the demarcation of the justice system as a pseudoscience and scientism. However, any demarcation analysis is incomplete if the characteristics of a science are not known; moreover, the gap created by the pseudoscientific nature of the system needs to be assessed with auditing tools. Specifically, law school curricula and other "insider" institutions that portray legal analysis as a science.²³ If legal analysis is a science, why then is math excluded from its study? Aren't math and science as the two wings of a

21. See JOHN H. GARVEY, T. ALEXANDER ALEINIKOFF AND DANIEL A. FARBER, *MODERN CONSTITUTIONAL THEORY: A READER* 91-125 (5th ed. 2004). In these pages essays of Robert Bork's supporting this position is included, while essays of Paul Brest offer both a practical and a normative critique of this view and Richard Kay provides responses to the prevailing criticisms of original intentions adjudication as being impossible and normatively objectionable. *Id.* at 91.

22. See Charles T. Goodsell, *Bureaucratic Manipulation of Physical Symbols: An Empirical Study*, 21 AM. J. POL. SCI. 79 (1977) (concluding that variations of physical symbols of bureaucracy exist based on the means of various organizational output roles and their hypothesized link with the comparative frequency of authority symbols on one hand and service symbols on the other). For example, the police, with a law enforcement mentality, play the role of wielder of authority; thus, their offices have fewer windows and hard chairs. Public health officials are by contrast, in a "helping" profession; thus, their offices tend to have plants, vending machines and waiting room reading material.

23. See, e.g., Marcia Speziale, *Langdell's Concept of Law as Science: The Beginning of Anti-Formalism in American Legal Theory*, 5 VT. L. REV. 1 (1980) (describing how law to Langdell was an applied empirical science that unfolded case by case); Edward White, *The Impact of Legal Science on Tort Law, 1880-1910*, 78 COLUM. L. REV. 213 (1978) (noting how the "scientific" methods of accumulating knowledge was applied to the field of law); Hessel E. Yntema, *The Rational Basis of Legal Science*, 631 COLUM. L. REV. 925 (1931) (commentating on the growing scientific inquisitiveness as to the underlying reasoning and foundations of contemporary legal scholarship and thought).

bird?

Some scholars in the legal field have identified the combination of law and science in fields such as “Law and Economics” and “Law and Biology” with scientism, a concept that shares the characteristics of a pseudoscience. The proposal herein made will depart from scientism by importing to legal analysis elementary methods and tools used in the sciences for developing and understanding any hypothesis and theory, without promoting any particular hypothesis or theory over another as in ideological explanations.²⁴ Therefore, instead of promoting any particular theory of economics, biology, or other field, the proposal here uses only the tools shared by these fields in making findings and developing theories.²⁵ Hence, this proposal is about using science as a process of discovery, unlike pseudoscience or scientism, where individuals use science as a talisman instead of a tool. Scientism is merely a justification, a prop, for what you think you already know, not a critical probe as in science.²⁶

C. *The Dark Age of the Law*

A complete analysis of why the legal establishment has for the most part excluded mathematics from legal methodology requires a historical analysis that exceeds the scope of this work. Such a historical perspective would need to consider whether the existing method of the justice system arose from a scientific vocation and transformed into a pseudoscience due to the prevailing hegemonies or, if to the contrary, began as pseudoscience and is in the process of becoming science. Richard A. Posner (1939-) has shared his impression regarding how the justice system developed into a field of itself, a monopoly under the appearance of a legal science,²⁷ relying on a writing of Sir Edward Coke that illustrates the pretext of “insiders” to preserve the *status quo*:

[T]he King said, that he thought the law was founded upon reason, and that he and others had reason, as well as the Judges: to which it was answered by me, that true it was, that God had endowed his Majesty with

24. See generally James E. Herget, *The Scientific Study of Law: A Critique*, 24 JURIMETRICS J. 99 (1984) (comparing the various scientific explanations of law).

25. See George L. Priest, *The New Scientism in Legal Scholarship: A Comment on Clark and Posner*, 90 YALE L.J. 1284, 1293 (1981) (arguing that the law should be methodically explained using whatever scientific techniques are available).

26. See William Dugger, UNDERGROUND ECONOMICS xix-xxii, n.18 (1992); see also Charles R. P. Pouncy, *The Rational Rogue: Neoclassical Economic Ideology in the Regulation of the Financial Professional*, 26 VT. L. REV. 263, n.76 (2002) (discussing the distinctions between the fundamental laws of physics and the fundamental models that can be interpolated from such laws, and the phenomenological and statistical models used in economics and finance theory which at best only permit extrapolations).

27. See Posner, *supra* note 19, at 766-77 (describing how the lack of political consensus and the growing use of complementary sciences in the study of law has started shifting the foundations of legal autonomy and rationale).

excellent science, and great endowments of nature: but His Majesty was not learned in the laws of his realm of England, and causes which concern the life, or inheritance, or goods, or fortunes of his subjects, are not to be decided by natural reason but by artificial reason and judgment of law, which law is an act which requires long study and experience, before that a man can attain to the cognizance of it: and that the law was the golden met-wand and measure to try the causes of the subjects; and which protected his Majesty in safety and peace²⁸

This statement shows how jurists developed a technocratic field to avoid the King's (Executive's) involvement in law. These "insiders" solidified their status and developed the idea that the law is not natural, but artificial, in order to avoid criticism. They preserved their hegemony by detouring from natural physical laws and instead embracing their human ideas. Subsequently, Christopher Columbus Langdell (1826-1906) in 1870 converted that autonomous field of legal analysis into an intellectual idea that spread as the leading paradigm of order and preservation of "insider" status.²⁹ Members of the justice system, through the case method, need only study their own opinions independently of the existence of other fields of knowledge. The study of jurisprudence has become the main source of education of the justice system and contributes to the autonomous field of the law, in charge of assuring order, peace, and justice through a specialized linear knowledge that only a jurist admitted to the bar may understand and interpret "correctly."

Some jurists have the impression that, by hearing expert testimony, they have successfully applied the scientific method to legal analysis. They also have the impression that, by hearing scientific testimony in a proceeding, legal analysis becomes interdisciplinary. Yet the exposure to the scientific method and other fields of knowledge through expert testimony in a trial does not automatically invest the jurist with the skills needed to integrate such methods and fields of knowledge into legal analysis.

An additional problem with this contention is that the courts use this type of expert testimony as a tool to explain or demystify scientific theory, which is very different from what a scientist actually does when applying math in scientific methodology. This is like the role of a jurist when she goes to dinner; the fact that she tasted and perhaps enjoyed the dinner does not automatically convert the jurist into a chef. This distortion of science in the law is arbitrary; the elements of each cause of action, crime, and rule

28. *Prohibitions Del Roy*, 77 Eng. Rep. 1342 (1607).

29. See C.C. LANGDELL, A SELECTION OF CASES ON THE LAW OF CONTRACT viii (2d ed. 1879) (using certain cases to derive the few fundamental legal principles that exist in contracts through inductive reasoning); Thomas C. Grey, *Langdell's Orthodoxy*, 45 U. PITT. L. REV. 1 (1983) (noting that Langdell believed that, through scientific methods, lawyers could arrive at the correct legal answers from certain integral principles and concepts).

of evidence distort and narrow the scientific inquiry to particular experts and methods. These false appearances and incorrect impressions further the theory of the law promoted by “insiders,” as the guardian of order, peace, and justice. This disguises its principal role, which is to maintain the current distribution of assets, resources, and opportunities.

We can infer from these concepts that, throughout history, the nature of the system itself did not change, but rather modified its actors. The jurist put himself into the shoes of the King, embraced with a heavenly science that only he may understand. Nevertheless, the intelligent tactic of jurists in substituting the King with similar attributes did not eliminate the pseudoscientific nature of the justice system. We infer that the justice system is a disguised form of power, not a system that seeks reliable tools for assessment of risk and achievement of “substantive security.”³⁰ The legal system has appropriated the power that the King had held through divine right (“heavenly science”) and used it to further the interests of the new holders of power, the traditional elites, and the emerging commercial classes. In this respect, knowledge has become the slave of the law just as it had become the slave of religious theology during the Dark Age of Faith, a period characterized by denial of all scientific reasoning.³¹ In that period, anyone who did not behave in accordance to the law of the Catholic Church was declared a heretic, and executed, which the current justice system does in a metaphorical sense when somebody does not think or behave in accordance to the law of the state as configured by “insiders.”³²

During the Dark Age of Faith (566-1095), science and thought did not develop in Europe, and human potential wasted its resources in close theological quibbles and hermeneutical exercises until the Renaissance. The bulk of the members of the legal community at the present are in a similar position to that of scholars of the Dark Age of Faith. Students and practitioners of the law are exposed to what the “insiders” want us to read, study, and analyze, through the concept of a limited jurisprudence. Jurists have become accustomed to see the world through the eyes of “insiders” due to our legal formation, just as the clergy did in the Dark Ages. Scholars substituted the Bible for the law and jurisprudence of “insiders.”

Nevertheless, the last stages of the Dark Age of Faith had flashes of hope personified in the following luminaries: Niccolo Machiavelli (1469-1527),

30. See RICHARD A. POSNER, *CATASTROPHE* 199-213 (2004) (finding that the institutional mechanisms likely to be used in dealing with catastrophic risks are the exact same principles that are necessary to integrate science with law).

31. See WILL DURANT, *THE AGE OF FAITH* 732 (1950) (describing this period as a time where the Catholic Church placed the word of religious authorities over personal experience and rational activity).

32. By metaphorical sense I mean the justice system will “kill” outsider’s cause of action or convict in a criminal case. See *infra* Part III.C.

who rebelled against the dictatorship of the clergy; Rene Descartes (1596-1650), dubbed the “Father of Modern Philosophy” and a major figure in seventeenth century continental rationalism; Baruch Spinoza (1632-1677), who laid the groundwork for the eighteenth century Enlightenment and modern day biblical criticism; and Leibniz, whom we have already discussed. These scholars sparked the empiricists Thomas Hobbes (1588-1679), John Locke (1632-1704), George Berkeley (1685-1753), Jean-Jacques Rousseau (1712-1778), and David Hume (1711-1776).

Today, we can perceive stages of the Dark Age of the Law with flashes of hope personified by jurists such as Holmes, the precursor of the legal realism movement,³³ Roscoe Pound (1870-1964), father of “sociological jurisprudence,” and Jerome New Frank (1889-1957). In addition, recent flashes of hope have been personified by Richard Posner with economics, Roberto Mangabeira Unger with Critical Legal Studies, J.B Ruhl and Harold J. Ruhl, Jr. with complexity theory, Douglas Baird and F.E. Guerra-Pujols with game theory, Laurence H. Tribe, Daniel Martin Katz, and the author of this paper with math and science.³⁴ This list is illustrative and not exclusive of other jurists and interdisciplinary trends on the rise.³⁵

33. See BOB WOODWARD & SCOTT ARMSTRONG, *THE BRETHREN* 1 (1979) (critiquing the “insider” methods, rules and procedures inherent to the Supreme Court).

34. The following articles display the mathematical and scientific perspectives that I have developed. See, e.g., Orlando I. Martínez-García & Mireya Baltazar-Suazo, *De la Educación al Colapso de la Justicia* [From Education to the Collapse of Justice] (2006) (unpublished manuscript), available at <http://ssrn.com/abstract=1104525>; Orlando I. Martínez-García, *The Pseudoscientific Nature of the Justice System and the Paths Towards Scientific Knowledge Processes that Lead to Universal Justice Patterns* (Oct. 1, 2007) (unpublished manuscript), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1104522; Orlando I. Martínez-García, *Towards a Justice System with Low entropy and Order Through: Reconstruction of Norm Construction Persons, Caps, Norm Construction Methods and Periodical Table of the Juridical Elements* (July 5, 2007) (unpublished manuscript), available at <http://ssrn.com/abstract=998740>. These viewpoints have been tacitly adopted and further refined, developed and applied by others, in specific the distinguished cluster from the University of Michigan composed of Michael J. Bommarito II and Daniel Martin Katz with the collaboration of Jon Zelner. See, e.g., Michael J. Bommarito II, et al., *Law as a Seamless Web? Comparison of Various Network Representations of the United States Supreme Court Corpus (1791-2005)* (Oct. 27, 2009) (unpublished manuscript, Proceedings of the 12th Int’l Conf. on Artificial Intelligence and Law (ICAIL 2009)), available at <http://ssrn.com/abstract=1419525>; Michael J. Bommarito II & Daniel M. Katz, *A Mathematical Approach to the Study of the United States Code* (Mar. 2010) (preprint submitted to Elsevier), available at <http://ssrn.com/abstract=1578094>; Michael J. Bommarito II & Daniel M. Katz, *Properties of the United States Code Citation Network* (Mar. 23, 2010) (unpublished manuscript), available at <http://ssrn.com/abstract=1502927>.

35. Before the Bible inspired divine authority in a God and before the law inspired the will of the people, the source of inspiration was nature. In those ancient times “insiders,” were able to manipulate thought and reasoning by personifying nature in the mythological gods.

III. A FRESH START FOR THE LAW: PREDICTIONS, OBSERVATIONS AND EXPERIMENTS

A. The Path

Holmes very much developed the legal argot of using “The Path” within legal scholars after his address “The Path of the Law” in which he stated, “[f]or the rational study of the law the black letter man may be the man of the present, but the man of the future is the man of statistics and the master of economics.”³⁶ When referring to statistics and economics, he implicates science; in a subsequent article, he develops the idea of a legal analysis that finds “answers based on science” while analogizing to the chemical and biological sciences.³⁷ Why does Holmes refer to science with such importance?

The respect human kind has for knowledge is one of the most peculiar characteristics of science. Knowledge in Latin is *scientia*, and science became the name of the most honored and respected knowledge.³⁸ Science has been defined as “a careful, disciplined, and logical investigation of any aspect of the universe, through the evaluation of the best evidence available and always subject to correction, improvement as better evidence is discovered.”³⁹

In the western sciences, Galileo Galilei (1564-1642) is considered to be the first scientist to use the scientific method, which he employed to determine that the planet Earth revolves around the Sun. He also revolutionized the sciences by emphasizing the observation of routine, everyday phenomena that society had largely taken for granted. Galileo was revolutionary, because he concentrated his energies in observing things people from his era had been trained to ignore.⁴⁰

Jurists of our justice system, through their academic preparation, have learned to ignore things that we must relearn to observe. We need to learn

36. HOLMES, *supra* note 6, at 469.

37. See Oliver Wendell Holmes, *Law in Science and Science in Law*, 12 HARV. L. REV. 443, 462 (1899) (advocating strongly a melding of science with the law due to science’s ultimate importance in the world, by finding the relative worth of our social ends, by its unyielding pursuit of truth, and its constant shifting of perspectives and viewpoints).

38. See Imre Lakatos, *Science and Pseudoscience*, in PHILOSOPHY IN THE OPEN 96 (Godfrey Vesey ed., 1974) (outlining his distinctive view that the “demarcation problem” of distinguishing between science and pseudoscience was a problem of vital social and political significance and was even comparable to life and death).

39. JOSÉ WUDKA, *THE SCIENTIFIC METHOD* (1988).

40. See FRITJOF CAPRA, *supra* note 9, at 22. Historians differ on exactly when the modern scientific age began, but certainly by the time Galileo Galilei, Rene Descartes, and Isaac Newton had their say, it was briskly under way. See also BRIAN GREENE, *THE FABRIC OF THE COSMOS, SPACE, TIME AND THE TEXTURE OF REALITY* 7 (2004).

to have a fresh and uncontaminated look towards the facts presented before the justice system in our time. The jurist of the *Nouveau Régime* must analyze the facts of the present through methods that incorporate the advancements of the philosophies of math and sciences from our unique spatial and temporal perspective for a sustainable evolution. The elements required to move a pseudoscience towards a science are essentially being able to perform inductive, verifiable, and falsifiable experiments. The first requirement of being inductive implies reliance on empirical evidence, experiments, and observation of facts. The second requirement of being verifiable means that its predictions can be verified. This requirement is credited to the nineteenth-century movement known as logical positivism developed by the members of the *Circle of Vienna* that insisted in the significance of a proposition being dependent on the method of its verification. If it cannot be verified, it does not have significance. However, this verification criteria has evolved and as originally construed has been in part abandoned as a research programme.⁴¹ The third requirement is to be falsifiable, which means making predictions capable of being submitted to a methodology that may prove them false.

It is this scientific attitude, this rationality, this intellectual responsibility toward knowledge, but even more, toward the human beings and the Cosmos, that should run through our veins toward pushing us to join our sensibilities and intuition the ways of the modern mathematician and scientist. Jurists should not give legitimacy to knowledge that presents us with a minimum of critical and argumentative rationality. We should procure what is practical and operational, not rely on what is speculative, inefficient, and fraudulent. In that spirit, I now explore the leading law of the United States of America within this frame of thought.

B. Inconsistencies with the Geometry of the Constitution: Counting and Graphing Experiment

While lawyers would do well, to be sure, to learn scientific logic from the exposition of scientific method, it is far more important that they catch *the spirit of the creative scientist*, which yearns not for safety but risk, not for certainty but adventure, which thrives on experimentation, invention and novelty and not on the nostalgia for the absolute, which devotes itself to new ways of manipulating protean particulars and not to the quest of undeviating universals.⁴²

41. See LOGICAL POSITIVISM (Alfred Jules Ayer ed., 1959); MARTIN DIEGO FARRELL, THE METHODOLOGY OF THE LOGICAL POSITIVISM (1979); Vienna Circle, Sept. 18, 2006, Stanford Encyclopedia of Philosophy, <http://plato.stanford.edu/entries/vienna-circle/>.

42. FRANK, LAW AND THE MODERN MIND (6th prtg. 1948), cited in J.B. Crozier, *Legal Realism and a Science of Law*, 29 AM. J. JURIS. 151 (1984).

In the *spirit of the creative scientist* and empiric descriptive analysis, I experiment with the Constitution and its leading interpretation in *Marbury v. Madison*⁴³ that will illustrate the inconsistencies of the actual legal *Régime*. With this illustration, I hope jurists break loose from the domain of limited analysis based on legal quibbles that promote “insider” status and look beyond the shadows of Plato’s famous Parable of the Cave.⁴⁴ It is important to expand our domains of analysis to see what legal analysis has trained us not to see.

Math will help us visualize a structure of the original intent of the Constitution, and how the legal community has frequently distorted that goal through traditional legal analysis of the autonomous field of the law in favor of “insider” status. Hence, I analyze the structure of the Constitution counting its Preamble, Articles, and Amendments. The traditional legal analysis is epitomized in the interpretation “insider” have given to the landmark case of *Marbury v. Madison* in order to keep their status.

In this example, the main tool is the measurement and visualization of existing phenomena of our justice system in order to detect patterns of regularity. The patterns of regularity are messages that come in coded form that can be deciphered using math. The conviction that the underlying regularity of Nature can be expressed in mathematical terms is at the very basis of the scientific method and has been historically supported by persons that made major contributions towards our understanding of the universe. However, in striving to avoid the pseudoscientific practice of relying on history or the prestige of certain persons to gain legitimacy, I refrain from mentioning any. Instead, I expose, based on our common experience, that it is the existence of physical systems in the natural world that lend themselves to arithmetic operations such as addition, subtraction, and multiplication, once assigned an abstract number to a collection of objects that corroborates what has been a constant, that the physical world is calculable. The example of the Constitution and other examples that follow regarding the person and use of numbers in legal analysis is an attempt to extend that constant of calculability to the justice system.

The method of converting words of the law, such as Constitution, into numbers is performed by counting different types of information conveniently separated into appropriate categories such as actors (legislative, executive, or judicial branches) in the actor category or actions or powers in the actions or powers category, all related to one another, making counting easier. This conversion also allows us to answer intriguing questions like, “Which actors (or types of actors) perform given

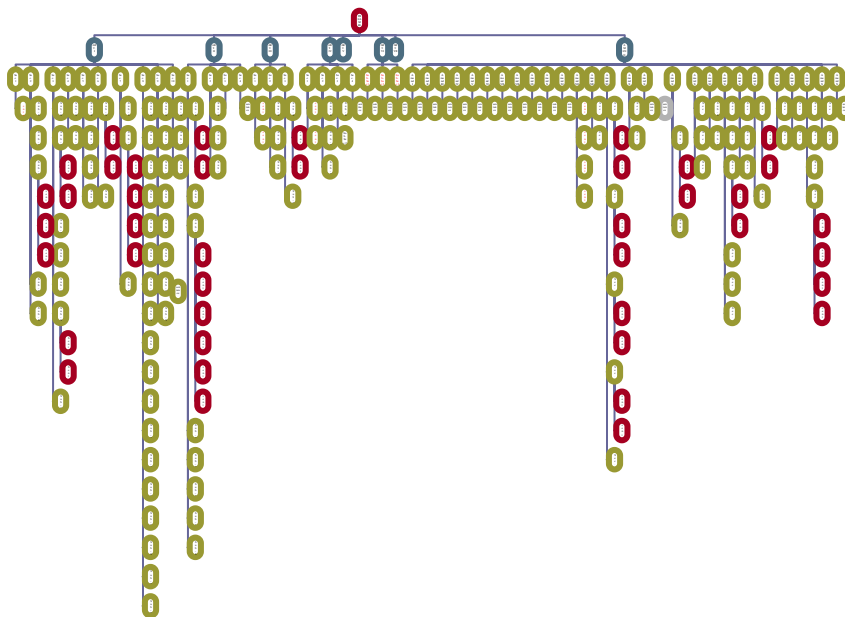
43. 5 U.S. 137 (1803).

44. PLATO, *THE REPUBLIC* (R. E. Allen trans., Yale Univ. Press 2006) (c. 380 B.C.).

actions?” This data can then be related using any type of Relational Database Management System (RDBMS) that makes possible the statistical analysis of what are words, despite the complexity of the structure. However, that exercise is out of the scope of this work and I highly recommend the work of my mentor in such matters, Dr. Roberto Franzosi for an in depth analysis of the force of this method.⁴⁵ I will now recapitulate the illustration of the Constitution an original analysis developed with basic standard software.

The Constitution consists of one preamble, seven articles, and twenty-seven amendments. Legal scholarship sometimes subdivides the articles and amendments into sections, in which some sentences and/or part of the sentences have numbers within brackets that we classify as sub-sections. The Constitution has one hundred and forty-four sentences distributed as follows: Article I has forty-four sentences, Article II has eighteen sentences, Article III has eight sentences, Article IV has eight sentences, Article V has one sentence, Article VI has three sentences, Article VII has one sentence, and the amendments total sixty-five sentences.

In order to graph this data I used Microsoft Word and produced the following graphic structure of “The Constitution:”



45. *See generally* ROBERTO FRANZOSI, FROM WORDS TO NUMBERS: NARRATIVE, DATA, AND SOCIAL SCIENCE (2004); ROBERTO FRANZOSI, QUANTITATIVE NARRATIVE ANALYSIS (2010). Other applications of content analysis are explored in KLAUS KRIPPENDORFF, CONTENT ANALYSIS (1980) and ROBERT PHILIP WEBER, BASIC CONTENT ANALYSIS, (Michael S. Lewis-Beck ed., 2d ed. 1990).

From top to bottom, the first level is composed of one circle representing one sentence of the preamble. The second level is composed of eight circles representing the headings of the seven articles and one circle for all twenty-seven amendments. The third level is composed of the headings of the twenty-one sections of Articles I through V, three sub-sections of Article VI, and the twenty-seven amendments. The fourth and fifth levels represent sub-sections and ordinary sentences under each section represented vertically from left to right; in the first vertical line, every circle is a sub-section and the linked circles on the right side of the vertical line appear if a sub-section has more than one sentence. Every circle has a text box that, due to the dimension and resolution of this graph, is impossible to read at this time; however, this limitation does not affect its universal graphic understanding. The graph in the first level has one sentence from the Preamble and all the other sentences or part of sentences classified as sub-sections are in the fourth and fifth levels. I now share one of my first impressions of this structure.

The graph shows us that Article I has the greatest number of sections, sub-sections, and sentences, and it is given syntactical and structural primacy and importance by being titled Article I, by being written prior to the other Articles and by being graphed in the far left side. Our eyes read first what is at the far left due to our habits and training of reading from left to right, the powers enumerated under Article I appear as sub-sections while the other Articles appear without any expressed enumeration, such as those in Article I, Section 8. How is it then that Article I has become sort of a technical assistant to Article III? Currently, Congress drafts and approves laws, but the Court establishes the final meaning of the law? Using this graph, could the argument be made that *Marbury v. Madison* should be revoked pursuant to the graphic structure of the Constitution?

Should the courts declare *Marbury v. Madison* unconstitutional? Has it perpetuated patterns of subordination, thanks to the pseudoscientific nature of the justice system? In other words, is *Marbury* legitimate simply because it was decided by an important person (Mr. Chief Justice Marshall), a long time ago (1803), and the decision has been reiterated repeatedly in subsequent jurisprudence? Has it shifted the power of the people to a few (oligarchy between the President and the Supreme Court Justices), reducing entropy and increasing order while fomenting the appearance of a strong Congressional body with high entropy? Does the power shared between the President and the Supreme Court Justices lend itself for telephone justice—in other words, a telephone call from the President to the Chief Justice or vice versa to decide the proper meaning of the law and how to execute it?

As we have seen in this example by merely counting, we have been able to find connections and patterns that otherwise are difficult to grasp. This illustration of inconsistency between structure of the law and subsequent interpretations has given a perspective on the nature of the problem and the need for auditing these repetitive patterns of control and subordination. We can now focus on the subject of the law as defined under the concept of the person in the hope that with this micro perspective on the person, I can plant a seed in legal scholarship for further scientific development of legal analysis.

C. The Person in the Law: Achilles' Heel

In order to focus and experiment further with the nature of the problem with the justice system vis-à-vis “insider” “outsider” dynamics, we now explore the concept of the person. I will illustrate the person through the statutory and jurisprudential treatment in Puerto Rico, a jurisdiction in which I have practiced law for the last fifteen years.

The Puerto Rico justice system constructs the concept of the person differently in the civil and criminal fields of law. The Puerto Rico Civil Code has two general modalities of the person: natural and artificial, as defined in Articles twenty-four and twenty-seven of the Puerto Rico Civil Code, stating, “[b]irth determines civil personality and capacity. A child shall be considered as born when completely separated from his mother’s womb.”⁴⁶ On the other hand, the code defines the artificial person as follows:

The following are artificial persons:

[a] Corporations and associations of public interest, having artificial personality recognized by law. The personality of such bodies shall commence from the moment of their establishment in accordance with law.

[b] Private corporations, companies or associations, whether civil, commercial or industrial, to which the law grants legal personality.⁴⁷

As these statutory definitions demonstrate, a person in the justice system is a human being or a corporation, company, or association of public or private interest recognized by law. Plaintiffs often base personal injury and other civil rights litigation lawsuits against officials and governments on these statutes that are incorporated by the courts through the Constitution. In some cases, the Legislature has partially taken over some areas of tort law and passed statutes that supplant or modify the definition of the person. For example, in product liability cases in which there is absolute vicarious

46. P.R. LAWS ANN. tit. 31, § 81 (2009) (corresponding to the Civil Code of 1930, § 24).

47. *Id.* § 101 (corresponding to the Civil Code of 1930, § 27).

liability, the person liable for a defective product includes manufacturers, distributors, and retail sellers.

Likewise, the Puerto Rico Penal Code defines persons as “[p]rincipals and accessories are criminally liable.”⁴⁸ Principal and authors are then defined in Section 3172 as follows:

Principals or authors shall be:

- [a] Whoever takes direct part in the commission of an offense.
- [b] Whoever forces, provokes, abets, induces or aids another to commit an offense.
- [c] Whoever avails himself of a nonliable person to commit the offense.
- [d] Whoever, subsequent to the commission of an offense, helps those who took direct part in the commission of the offense in compliance with a promise prior to said commission.
- [e] Whoever cooperates, in any other way, in the commission of the offense.⁴⁹

The code then expands the definition of person to include other categories under the term accessories. The code states, “Accessories are deemed to be those who in order to evade the action of justice, knowing of the offense, without having taken part as authors, conceal the offender or procure the disappearance, alteration, or concealment of evidence.”⁵⁰ Finally, we have “juridical persons,”⁵¹ who are defined in the Penal Code as:

Juridical persons legally constituted in the Commonwealth of Puerto Rico or authorized to act as such and not unincorporated shall be a criminally liable association where through persons authorized to carry out their agreements and on their behalf, or upon performing acts attributable to them, commit criminal acts.

This liability does not exclude individual liability attached to the components, directors or representatives of the juridical persons or of the unincorporated associations which take part in the criminal act.⁵²

The Puerto Rico criminal system, similar to the majority of jurisdictions worldwide, establishes a nominal distinction between criminal and civil law that substantially affects the role of the object (general or particular

48. *Id.* at tit. 33, § 3171 (corresponding to various provisions of the Penal Code of 1974) (repealed 2004).

49. *Id.* § 3172 (corresponding to various provisions of the Penal Code of 1974) (repealed 2004).

50. *Id.* § 3173 (corresponding to various provisions of the Penal Code of 1974) (repealed 2004).

51. The official translation of the term “*personas jurídicas*” in the Puerto Rico Civil Code is “artificial persons,” while in the Puerto Rico Penal Code the same term has been translated using the word “juridical” instead of “artificial,” I have not found any reason for such subtle variance.

52. tit. 33, § 3174 (corresponds to various provisions of the Penal Code of 1974) (repealed 2004).

victim) through its definitions of the person. By definition, crimes involve wrongs against the state, and the person who brings the action is a public prosecutor rather than a private individual. This distinction is crucial, since the state may not only impose monetary penalties on criminal offenders— analogous to awards of civil damages in tort cases—but may also imprison those found guilty of crimes. Of course, the victim of a crime will often be the central actor in a criminal prosecution, both as a witness and as a party in a separate tort action seeking personal compensation for the injuries inflicted by the crime.

Yet, the concept of crime is conceptually distinct from that of tort, because in criminal proceedings the state brings the action to vindicate the interests of society. If the definition of the person is ambiguous and general, it will have malleable overbroad implications. “Insiders” will have at their disposal the overbroad concept of the person as a key to the vault of state resources to decide through its agents in the justice system when to prosecute or acquiesce in order to preserve “insider” hegemony. Hence, the prevailing legal regime as used by “insiders” through the broad and ambiguous conception of the person is often a diplomatic way of disguising the exercise of force and oppression against “outsiders.” We now consider how the Supreme Court of Puerto Rico has interpreted these statutes.

Regarding the person as defined in the Civil and Penal codes, the opinions of the Supreme Court of Puerto Rico have consistently expanded or restricted their coverage to all types of behavior reflecting arbitrary constructions that promote “insider” status. The court’s opinions on civil matters have consistently expressed that the person in the juridical sense means every being or entity capable of rights and obligations.⁵³ An “Artificial Person” is, consequently, the collection of persons or goods that organized for purposes of realizing a permanent goal, obtain recognition by the State as a subject of law.⁵⁴ The court held in *Laureano Pérez v. Soto* that in order for a person to be responsible in an action for damages, it is necessary that that person has acted with free will and capacity.⁵⁵ The opinions in criminal matters pertaining to the person illustrate how courts using tools of hermeneutics include or exclude persons from prosecution or liability through the law and “legitimize” prevailing practices that prolong exclusion of “outsiders.” In that trend, a potpourri of Puerto Rico Supreme Court opinions has established the following precedents.

53. Rivera Maldonado v. Commonwealth, 19 P.R. Offic. Trans. 88, 95 (1987).

54. Rivera Maldonado v. E.L.A., 119 D.P.R. 74 (1987) (citing DIEGO ESPÍN CÁNOVAS, MANUAL DE DERECHO CIVIL ESPAÑOL 370 (6th ed. 1977), available at http://openlibrary.org/books/OL5264920M/Manual_de_derecho_civil_espan%CC%83ol).

55. Laureano Pérez v. Soto, 141 P.R. Dec. 77, 89 (1996).

Mere presence of a person during the commission of a crime is not sufficient, in and of itself, to sustain a conviction for that crime, but the Court has extended this definition in *Pueblo v. Pagan Santiago* by stating that presence may be considered together with other circumstances that surround the event for purposes of determining criminal liability.⁵⁶ This construction has been expanded to the domain of facts to be considered by expanding the time dimension to events before and after the wrongful events. The court made such time expansions by stating in *Pueblo ex rel. F.S.C.* that in cases of co-authorship, criminal liability should be established by prior and subsequent acts, and which considered together reveal existence of conspiracy or common design.⁵⁷ This expansive construction increases the domain of events to be considered to those prior and subsequent, events that under such a construction may be infinite. This is problematic because such a definition has no objective, verifiable or falsifiable limit as to which prior or subsequent facts to consider.

Puerto Rico precedents also extend the evidence that may support a conviction on indirect evidence. The court held in *Pueblo v. Ortiz Martínez* that to establish a principal's criminal liability based upon common design, indirect or circumstantial evidence suffices to establish concert or agreement.⁵⁸ Indirect and circumstantial evidence opens the gates for agents of the state to justify any determination based on any fact, since in a system, everything is part of a whole and as such, it is interdependent.⁵⁹ As such, "insiders," through agents of the justice system, may conveniently highlight any fact and give it more credibility and weight than other facts in order to justify excluding "outsiders."

Where mere presence has been found, extensions of the concept have been developed to impose criminal liability. Where a principal's liability could be established from prior actions or as the result of conspiracy or common design, mere passive presence thereof during a criminal transaction sufficed to hold him liable and personal, active participation was not required.⁶⁰ Notwithstanding the fact that mere presence of person in the scene of a crime would not suffice to sustain a conviction, such

56. *Pueblo v. Pagan Santiago*, 130 P.R. Dec. 470, 478 (1992).

57. *Pueblo ex rel. F.S.C.*, 128 P.R. Dec. 931, 938-39 (1991).

58. *Pueblo v. Ortiz Martínez*, 116 D.P.R. P.R. Offic. Trans. 139174, 116 P.R. Dec. 139, 145 (1985).

59. Cf. TRINH XUAN THUAN, CHAOS AND HARMONY, PERSPECTIVES ON SCIENTIFIC REVOLUTIONS OF THE TWENTIETH CENTURY 216-17, 225 (2006) ("The world is no longer simply a huge collection of inert and isolated particles subject to mechanistic and deterministic laws, the way Newton and Laplace had imagined. Quantum mechanics tells us that localized reality has no meaning and that these particles are part of a whole. The universe is unified into a vast network of connections and interactions.").

60. *Ortiz Martínez*, 116 P.R. Dec. at 145.

presence together with other circumstances surrounding criminal transaction could be taken into consideration to hold the person liable under principles of co-principalship.⁶¹ Furthermore, intentional conduct traditionally considered *malum in se* is not required; an omission traditionally left to the civil arena or a tort action may also be included as criminal conduct.⁶² Precise definitions of sufficient surrounding criminal circumstances are ill defined or limited; it will depend on what “insiders” in the justice system select, give weight to, and interpret.

Precedents have also established that even when the person is neither at the scene of the crime nor has a mere passive presence, she can still be held criminally liable if the system determines that she had an agreement or motivated the chain of events, a finding that depends on the discretion of credibility determinations by “insiders” agents in the justice system. The court has found that where two or more concerted people in agreement motivate the possession and carrying of an illegal firearm, the fact that only one defendant actually illegally possessed and carried the weapon does not exonerate the other(s).⁶³ The initiator of a criminal action should be liable for its ultimate consequences.⁶⁴ A person who keeps a runaway car motor running to facilitate escape after robbery has been correctly deemed a principal or author.⁶⁵ Furthermore, a principal or author of a robbery resulting in two murders cannot claim exclusion of criminal liability thereof because a group of citizens had arrested her before those murders occurred.⁶⁶ From these precedents we can infer that where “insiders” target and isolate an “outsider” through arrest the courts can still hold her liable for conduct performed by others, even when she is under their control unable to make any command or take any action in favor or against events out of her reach.

In civil actions, a tort is defined primarily as an event, arising out of the

61. *Id.*

62. See Paul Rosenzweig, HERITAGE FOUND., *Executive Summary: The Over-Criminalization of Social and Economic Conduct*, 1-2 (Apr. 17, 2003), <http://www.heritage.org/Research/Reports/2003/04/im7-Executive-Summary-The-Over-Criminalization-of-Social-and-Economic-Conduct> (discussing how legislatures have expanded criminalized conduct in pursuit of public goods instead of primarily focusing on acts thought to be intrinsically wrong).

63. See *Ortiz Martínez*, 116 P.R. Dec. at 149 (“The possession and transportation of a weapon could be imputed to another accused when facts that constitute elements of the crime are present and the accused that did not possess or transport the weapon takes a direct or indirect part in the commission of the crime”).

64. *People v. Calderon Laureano*, 13 P.R. Offic. Trans. 742 (1982) (“Anybody that initiates a criminal act should respond for the consequences that her act create.”)

65. *People v. Lucret Quinones*, 11 P.R. Offic. Trans. 904 (1981) (“There isn’t the slightest doubt that the person that remains in a motor vehicle while a robbery is conducted, with the motor vehicle running so that the others escape immediately, is an author of the crime.”).

66. *Id.*

action or omission of another party and causing injury to the human body or mind, to property, or to an economic interest, in circumstances where the law deems it just to require compensation from the person who has acted or failed to act. Puerto Rico bases civil tort liability on Article 1802, which consists of two sentences that state, “[a] person who by act or omission causes damages to another through fault or negligence shall be obliged to repair the damage so done. Concurrent imprudence of the party aggrieved does not except from liability, but entails a reduction of the indemnity.”⁶⁷ Upon this disposition, Puerto Rico courts have found enough flexibility to expand its coverage to all forms of conflict avoiding scrutiny from audits or independent established scientific methodology to corroborate their analysis.

Under these broad guidelines, can an “outsider” escape prosecution and conviction if targeted for approximating too much to “insiders” circle of power? Yes, during my fifteen years of practice as a trial attorney in the state and federal courts I have used my office as a laboratory in which every case is a new experiment in which I view the process with an open perspective not limited to facts and procedures within the parameters of traditional legal analysis (law, rules, and jurisprudence). I integrate knowledge of different fields while observing and studying the justice system dynamic. As a result, I have corroborated through various cases the critique of LatCrit scholars that when the defendant is an “insider” and the stakes are high, judges maneuver with procedural and substantive discretion against the “outside” party. However, when the defendant is an “outsider” and the stakes are also high, procedural and substantive laws are applied according to their regular meaning and practice against them.

Following the call of LatCrit scholar, Francisco Valdes, to “perform the theory”,⁶⁸ and in the spirit of the scientific method, the following are examples of some of the federal cases in the United States District Court for the District of Puerto Rico in which I have participated and observed various modes and maneuvers of “insiders” in distorting the law to further their own interests. These case samples are a bank of data for further legal and empirical analysis:

a. *Metropolitan Life Insurance Co. v. Garcia*, the court protected the “insiders,” striking motions from the record in order to generate a “chilling effect” that encouraged “the outsiders” my clients to abandon the case,⁶⁹

67. P.R. LAWS ANN. tit. 31 § 5141 (amended in 1956, Law 28).

68. Francisco Valdes, *Barely at the Margins: Race and Ethnicity in Legal Education-A Curricular Study with Lat Critical Commentary*, 13 BERKELEY LA RAZA L.J. 119 (2002).

69. 3:01-CV-01-1239 (D.P.R. Jan. 20, 2005) (the “insiders” were the United States Postal Office and Metropolitan Life Insurance Company); see also *Garcia-Sanchez v. Metro. Life Ins. Co.*, No. 3:02-CV-02591 (D.P.R. Oct. 26, 2004) (similar pattern to the

b. *Alfonso-Reyes v. United States*, the plaintiff, a federal employee, was the “outsider”, and the United States government was the insider. Plaintiff, Ismael was a federal employee with nationalistic perspectives and as such, an “outsider”, he was also active in signaling irregularities of “insiders” and as a result was subjected to retaliation. The system failed to address his complaints and the machinery of the justice system was activated against him for encroaching upon “insiders” circle. As a result, he ended being convicted and deprived of all his wealth;⁷⁰

c. *C.J.P.I. v. Pfizer Pharmaceuticals, Inc.*,⁷¹ a father was shot to death with an illegally introduced firearm into the working premises by a management-level employee who used to sell weapons to subordinates and other co-employees. In this case, the Court dismissed with prejudice the complaint of plaintiff, the victim’s minor child, due to six months of inactivity, despite the fact that the minor did not have legal representation and his mother had a conflict of interest because she continued to work for the defendant, Pfizer;

d. *Mendez Internet Management Services, Inc. v. The Bankers Association of Puerto Rico*,⁷² the Court’s use of discretion in procedural matters has unreasonably favored the “insiders’,” banks and the Bankers Association;

e. At the state local level, *Club Cala de Palmas del Mar Property Owners Ass’n, Inc. v. Club Cala de Palmas Properties Inc.*,⁷³ where the Superior Court of First Instance of Humacao, Puerto Rico abused discretion in procedural interpretation depriving plaintiffs of discovery, and evaded issuing opinions supported with facts and law. The allegations of plaintiffs were also ignored by the existence of gross inaction by the state agencies (Department of Tourism and Department of Consumer Affairs “DACO”) and the Court of the Commonwealth of Puerto Rico, inaction that protected the interests of “insiders’,” in this case, local developers against “outsiders”, the timeshare owners.

These ambiguities and internal inconsistencies support the need for a new approach under a *Nouveau Régime*. The approaches discussed in the next parts will propose concrete methods to measure and audit these

previous case was followed)

70. No. 3:04-CV-01220 (D.P.R. Apr. 21, 2005), *see also* *United States v. Alfonso-Reyes*, No. 3:03-CR-00124-02 (D.P.R. Jan. 19, 2010). Likewise, in *United States v. Toledo-Fernandez*, the plaintiff “outsider” got too close to the “insiders” circle. No. 3:03-CR-00124 (D.P.R. Jan. 19, 2010), *aff’d sub nom.* *United States v. Alfonso-Reyes*, 593 F.3d 280 (1st Cir. 2010).

71. 04-2236(JAF).

72. No. 3:09-CV-01667; 09-1667(FAB).

73. Civil No. HSCI2006-112 (208), 2007 WL 2345143, at *6-8 (P.R. Cir. June 29, 2008).

scholars to perform a more rigorous analysis, and will open the gates to auditing the methodologies that are used by “insiders.” Audits help develop consensus by the people under a *Nouveau Régime*.

The concept of a number is not a fixed, rigid idea, as many perceive it to be, but an ever-evolving notion, just as the RUI parameters establish. As our understanding of the world expands and our capacity for abstract thinking grows, so too does our view of what a number means. In math, the development of algebraic symbolism grew in various stages: the rhetorical or early stage, in which everything is written out fully in words; the syncopated or intermediate stage, in which some abbreviations are adopted; and the symbolic or final stage. Such an arbitrary division of the development of algebra into three stages is, of course, a facile oversimplification; but it can serve effectively as a first approximation to what has happened.⁷⁶ The law is still in that primitive phase of words and sounds, while algebra and mathematics generally epitomize the third stage of symbolic expression.

The statutory definition of a person in the Puerto Rican justice system (and the jurisprudence previously presented) evade audits through the absence of any reliable methodology, providing an example of the law’s pseudoscientific nature in a primitive rhetorical stage. This primitive stage preserves cliques and clusters of “insiders” and unreasonable degrees of inequality and inefficiency in society. In contrast, the use of numbers, as in arithmetic, can open the gates of legal analysis to rigorous analytical methodologies, such as functions to describe relationships, models to predict what will happen or review what happened, and systems of equations (linear, quadratic, polynomial, rational, exponential, and logarithmic) to find balance and equitable results based on available data instead of a system that evades audits in order to justify any convenient position.

Many jurists incorrectly believe that mathematicians understand and know all of mathematics; in fact, most of mathematics remains mysterious. The law, similar to mathematics, has been motivated by necessity, but in different dimensions; law has been used by “insiders” under reigning hegemonies to maintain power, while math has been used by physical and theoretical scientists and scholars to enhance universal understanding that has permitted significant theoretical and applied innovations.

Moreover, ordinary citizens by necessity have historically had a major role in the evolution of numbers that antedates writing, literacy, or even numerical symbols. For example, ancient cultures performed calculations on sand tables. Merchants and government officials placed pebbles and

76. CARL B. BOYER, A HISTORY OF MATHEMATICS 180 (2d. ed. 1991).

other markers in columns representing different numbers and then moved them to depict addition or subtraction.⁷⁷ A possible origin for the zero symbol might be the round dimple left in the sand when a pebble was removed, leaving an empty column.⁷⁸ Another example was when shepherds tended flocks and had to keep track of their sheep. As primitive (agricultural) societies developed, people needed to measure and divide land, keep track of livestock, record harvests, and take census data. With growing populations and clashing cultures, a modern economy arose with many areas of conflict, requiring armies—which in turn required these new leaders to confront the logistics of arming and feeding their soldiers.⁷⁹ Hence, a modern economy needed to measure transactions in order to find equitable distributions and solve conflict.

Similarly, the law out of necessity also developed from a primitive state to a complex one. In the civil law of modern western civilization, as European nations transformed from primitive into complex states, they discovered the Justinian Code, *Corpus Juris Civiles*, during the thirteenth century in Bologna, Italy, as a key source of guidance for governing institutions in keeping order and hegemony.⁸⁰ Nevertheless, the study of the law evolved in such a way as to exclude mathematical notions of the person through the number. Though the reasons for this evolution are beyond the scope of this work, I suspect the exclusion of the number in the present legal system is a product of the “insiders’” sense of self-preservation, as the current system evades rigorous forms of auditing and simultaneously permits the exercise of power against anybody under any pretext.

However, it is worth clarifying that during the last century mathematical trends in the law have existed, and, while they have not gained prominence, they have exerted influence over the process. Some scholars have reacted negatively to this development. For instance, Laurence H. Tribe has criticized “the growing and bewildering literature of praise for mathematics in the trial process.”⁸¹ Tribe focused his critique on the actual conduct of civil and criminal trials and accordingly, in designing procedures for the trial system as a whole. Nevertheless, Tribe focused on the likelihood and

77. See EDWARD B. BURGER, *ZERO TO INFINITY: A HISTORY OF NUMBERS, THE TEACHING COMPANY COURSE GUIDEBOOK* 11-20 (2007); MORRIS KLINE, *MATHEMATICS FOR THE NONMATHEMATICIAN* 58-75 (Dover 1985) (1967).

78. See BURGER, *supra* note 77 at 15, 17.

79. See *id.* (detailing the origins of numbers and their use throughout history).

80. See ARTHUR TAYLOR VON MEHREN & JAMES RUSSEL GORDLEY, *THE CIVIL LAW SYSTEM* 3-15 (2d ed. 1977) (detailing the background of law of property, tort, contract, and unjust enrichment).

81. Laurence H. Tribe, *Trial by Mathematics: Precision and Ritual in the Legal Process*, 84 HARV. L. REV. 1329, 1332 (1971).

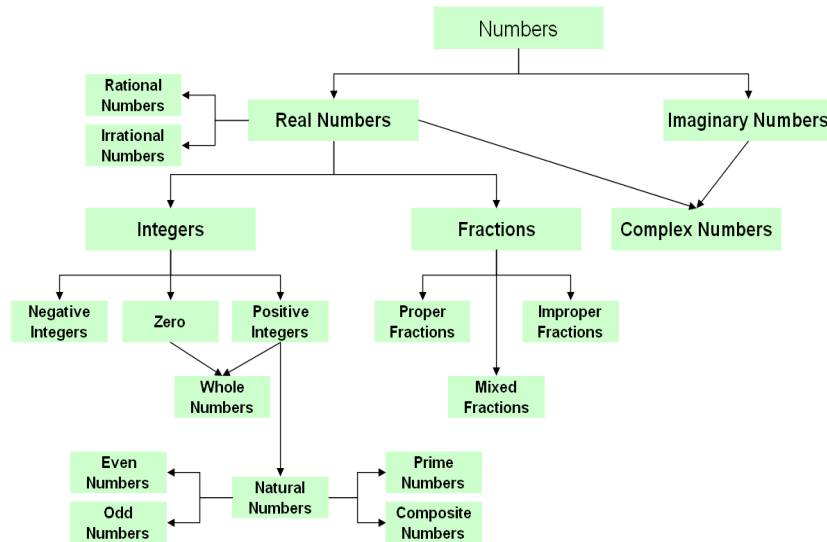
proofs of facts using probability theory, and did not contemplate or exclude using math to audit either existing legal analysis or using basic elements of math (such as numbers) to substitute for the vague legal construction of the person, as is proposed here.

Returning to the nature of numbers and words, when used as the justice system does through its capacity of infinite interpretations, develops complexity and uncertainty that distorts our capacity for analysis and understanding. Human beings have an innate number sense that allows us to compare instantly small collections of objects, but the more complex the collection of events, the more difficult it is to grasp by looking. A well-known example is the barred gate system of representing numbers (~~IIII~~). Numbers arose out of utility; thus, some naming conventions are limited. Primitive cultures may function very well with words for one, two, three, and many, but after that, most generalized by pointing to their hair, implying that, beyond four, things were as countless as the hairs on one's head.⁸² This characteristic of the human capacity to perceive and understand is exactly what empires have exploited by keeping the state of complexity that exists in the law high, with ambiguous concepts that evade auditing, such as the prevailing conception of the person.

The concept of number today includes different categories that mathematicians have rigorously proven to exist through methods and peer review, and with a proven record of technological achievements resulting from their use. In sum, we have the realm of real and imaginary numbers, of which mathematicians have developed complex-transcendental numbers, as follows:⁸³

82. See BURGER, *supra* note 77, at 12.

83. The Ultimate Guide to Number Classification, Lazymaths.com, <http://www.lazymaths.com/zlog/wp-content/uploads/2009/05/number-classification.pdf> (last visited May 21, 2010).



I reiterate that the discovery of numbers, contrary to the ambiguous concept of the person, has made it possible to achieve a better understanding of natural phenomena, thus opening the gates for universal harmony. An example of this progress through numbers has been the discovery of the prime, Fibonacci, Euler (e) and Pi (π) numbers.

The number π is used to calculate the area of the circle and it appears in countless important formulas and theories, including the Heisenberg uncertainty principle and Einstein's field equations from his theory of general relativity.

In addition, the number e , has a value of approximately 2.71, and is fundamental in our understanding of growth and decay, more commonly referred to as "exponential growth" and "exponential decay." The number e is used frequently in areas such as calculating population growth and radioactive substance (half-life) decay. The prime, Fibonacci, π and e numbers are important numbers in the study of calculus and physics. However, legal study and analysis have failed to exploit them, despite their success in economics and scientific fields of study. In fact, π helped number theorists advance the field of numbers by leading to the discovery of complex and transcendental numbers.⁸⁵ Nevertheless, the discussion of the special characteristics of these numbers is beyond the scope of this

84. *Id.* at Fig. 3.

85. RICHARD COURANT & HERBERT ROBBIN, REVISED BY IAN STEWART, *WHAT IS MATHEMATICS* (2d. ed. 1996) (1941) (describing prime numbers at pages 21-30, complex numbers at pages 88-97 and transcendental numbers at pages 103-107); BURGER, *supra* note 77, at 69; *see also* JOSEPH MAZUR, *EUCLID IN THE RAINFOREST, DISCOVERING UNIVERSAL TRUTH IN LOGIC AND MATH* 172 (2005).

paper. Thus, I will now present some examples of how some may be used in legal analysis.

B. The Legal Alchemist: Playing with Numbers and the Law: Whole Integers Experiment and Even and Odd Integers Experiment

The use of numbers as a theoretical foundation for further application to the subjects and objects of social dynamics should enhance the efficiency of auditing the exercise of power by insider hegemonies in society. It would be no surprise to find persons or the infinite set of social behavior identified with properties found in numbers, such as integers, prime numbers, e , π , and the Fibonacci sequence.

These elements of numbers are essential for the discovery of natural sociological patterns and the nature of conflicts that have long been ignored. Numerical structure, beauty, and pattern existed long before humankind discovered numbers, but they ably show the path toward acknowledging that which is most familiar to us, when described mathematically, often appears exotic. Mathematical analysis shows that numbers that first appear as exotic are more the norm, and that numbers that first appear to be the norm are, in actuality, exotic. Jurist may find something similar in our body of law, once legal analysis is audited using numbers? I now proceed with three examples, which I hope trigger further reflection on the many ways a jurist might utilize numbers in legal analysis to further the goal of auditing “insiders.”

Example 1: Whole Integers

In seventh century India, negative numbers were used to represent debt, and so it then became necessary to clearly distinguish positive numbers from negative numbers, or to emphasize what is positive as opposed to what is negative.⁸⁶ In legal analysis, we could improve distinctions between actions and omissions that cause harm with the use of negative integers, a bright-line distinction that the concept of the person does not rigorously attend.

Similarly, when somebody dies of natural causes, the absence could be related to a zero that is not attributable to any action equivalent to a positive-natural number, or an omission to act, such as a negative number. The use of zero, a neutral number, when an action is neither the product of an action or omission that causes a harm, would be a more precise depiction of the natural neutral state that death of a subject generates. Similar to the space left when a sand pebble was removed from the sand tables used for calculations, when somebody dies, a space is also left. In

86. See KLINE, *supra* note 77, at 72.

math, this space left by the pebble may have led to the broader use of place-based number systems and the development of our modern decimal system, with its powerful positional numeral system. Legal studies have failed to exploit the number zero as used in mathematics and other categories such as rational numbers (fractions) when handling concurrent causes of actions or comparative negligence, omissions that have potentially debilitated legal analysis in furtherance of “insiders.”

Example 2: Even and Odd Integers

A strategy used to decipher any type of phenomena through “divide and conquer” is creating one-to-one relationships of social phenomena with numbers and then breaking them into two classes, even and odd. An even number is a whole number that is twice another whole number, while an odd number is not divisible by two.⁸⁷ These are two characteristics of all natural numbers; they can be divided into the set of numbers that has no remainder after dividing by two, and the set of numbers that have a remainder of one after dividing by two. On the surface, this doesn’t seem any more useful an idea than simply saying the set of natural numbers is the union of the set of even numbers and the set of odd numbers. However, the ramifications are extraordinary: it reduces an infinite collection of things to a finite collection.⁸⁸

In addition, numbers are sets of things with order, structure, and quantifiable properties. Numbers’ structure emanates from the operations of arithmetic that can be performed among and between them. In the quest for structures of phenomena, such as our previous example with the visual construction of the Constitution addition is an indispensable tool that gives us a unique integer for every pair of integers added together. We can classify this pair of integers as well as the unique product of their sums as even or odd.

In similar fashion to the infinite set of integers, we can apply numbers to other problems in law and social dynamics regarding the treatment of such fundamental aspects as the passive or active behavior of a person or the nature of private or common/public property, just like we have just described with even and odd numbers. The pattern that arises out of these arithmetical applications consists of the following three modalities:

87. THE PENGUIN DICTIONARY OF MATHEMATICS 151, 303 (David Nelson ed., 3d ed. 2003).

88. “Mathematicians call this the group ‘Zee-mod-two,’ and denote it as $\mathbb{Z}/2$. The letter \mathbb{Z} denotes the integers; the 2 denotes the modulus—all numbers divisible by 2 are equivalent, and all integers having remainder of 1 after division by 2 are equivalent.” MAZUR, *supra* note 85, at 105. In other words, this becomes a binary classification of a first group of equivalent integers under 0 and the second group of equivalent integers under 1.

1. The sum of any two even integers gives us an even integer.
EVEN + EVEN = EVEN
2. The sum of two odd integers gives us an even integer.
ODD + ODD = EVEN
3. The sum of odd and even integers gives us odd integers.
ODD + EVEN = ODD

If we apply this scheme of unique products of addition of even and odd numbers to a person's behavior and social dynamics, we may predict the patterns of her effects. To illustrate, let us classify with the even number zero (0) any active or passive behavior of persons that promote common public property in the system and classify with the odd number one (1) active or passive behavior of persons that promote private property in the system. Wherever zero (0) is we also include "common" and wherever we have a one (1) we also include "private" for the nature of property as a result of the interaction of persons classified as even and odd, depending on the structure and behavioral characteristics of the persons and property. We can now apply the arithmetical modalities of even and odd numbers in a matrix format as follows:

+	Common 0	Private 1
Common 0	Common 0	Private 1
Private 1	Private 1	Common 0

No matter how we label the two categories, be it with integers of even and odd numbers, or with colors such as black and white, or as here with types of properties, the addition would have the same results. This arithmetic inherits many of the structural properties of integers, such as the cancellation law, $x + y = x + z$, implying that $y = z$ when x , y , and z are integers. Therefore, you may have any other set of categories of members that have these additive structural properties, and it will have the same result as the above matrix. The only difference would be the names; hence, the implications of this methodology using numbers for persons would constitute a substantial leap in standard legal analysis. As the German physicist Heinrich Hertz (1857-1894) expressed: "We cannot help but think that mathematical formulas have a life of their own, that they know more than their discoverers do, and that they return more to us than we have invested in them."⁸⁹

89. THUAN, *supra* note 59, at 314.

This method of reducing an infinite collection of issues of fact and law, such as $[w, \infty)$ into a finite collection of issues of fact and law $[w]$ helps members of the justice system make connections between two sets of issues of fact and law, such as the particular issues of a particular case and controversy and the answer choices the system must make. This technique helps find equivalency for purposes of the competing issues under consideration and the outcome of their relations. This then is an alternative, elegant way of solving issues; such as, the nature of a given property based on its characteristics. In the illustration of private + private = common, we see what at first glance might be counterintuitive, that an issue between two persons and/or collections of interest regarding the private nature of property results in property of a common nature. Is this really contradictory? What are its implications?

The fact that two persons or collection of persons share the same interest, customs and beliefs would result in a social interaction that is common to either persons or collections. Only in the presence of competing different interests is the seed of private interest prevailing over common. For example, in an election 50% of voters are in favor of one candidate that represents certain interest, customs and beliefs and the other 50% of the voters favor the opposing candidate, things would stay balanced, static or common in this type of election. However, in the presence of an odd election in which 51% of the voters are in favor of one candidate and 49% in favor of the other would there be a person or collection of persons prevailing over the other and thus an unbalanced, dynamical and thus private type of election. The same pattern would follow in any adjudication the justice system performs. This matrix graph is then an elegant way of approaching some of the most important existing debates of legal analysis regarding the nature of property.⁹⁰

In order to apply this methodology to the issues regarding the nature and behavior of persons such as the dynamics of “insiders” and “outsiders” and their effects, we would need to identify the even and odd structural characteristics and the threshold levels of each type of person or group. Once we make this classification and/or coding, we can review the results by reiterating this application, in order to uncover patterns of norms for the *Nouveau Régime*.⁹¹

90. RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 31-91 (6th ed. 2003).

91. I have been tinkering with the nature of even and odd numbers and their correlation with symmetric and asymmetric, stable and unstable, static and dynamic phenomena. The present proposal may very well hold the key for the independent components of legal analysis as a new paradigm based on static, comparative static and dynamics as suggested by Peter Ziegler in *A General Theory of Law as a Paradigm for Legal Research*, 51 *MOD. L. REV.* 569, 589-92 (1988). I have personally approached the patterns from the perspective of Chaos-Complexity theory, which is the underlying structure upon which other scholars have developed their theories. The product of such

C. Numbers and Causation Using Functions

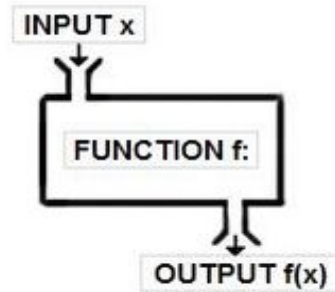
Functions are an excellent way of analyzing the dependence between two things: the cause and the effect of an event. In imposing criminal or civil liability, the use of functions (as developed in math) would substantially enhance the determination of causation. In a function, a direct relationship exists between two things in which one action, omission, or numerical value in some way depends on the action, omission or numerical value of the other. The action, omission, or thing that depends on the other value is called the dependent variable; the other value is the independent variable. The independent variable is called the *input variable* and in a graph it is represented with the x-axis also known as abscissa. The dependent variable is called the *output* or *answer* and in a graph it is represented with the y-axis also known as ordinate.

In math, a function is a direct relation between a given set of elements (the domain) and another set of elements (the co-domain), which associates each element in the domain with exactly one element in the co-domain. The elements so related can be any kind of things (words, objects, qualities) but are typically mathematical quantities, such as real numbers. In a setting where outputs of functions are numbers, functions may be added and multiplied, yielding new functions.

There are many ways to represent or visualize functions: a function may be described by a formula, by a plot or graph, by an algorithm that computes it, by arrows between objects, or by a description of its properties. Sometimes, a function is described through its relationship to other functions (for example, inverse functions). In applied disciplines, functions are frequently specified by tables of values or by formulae.

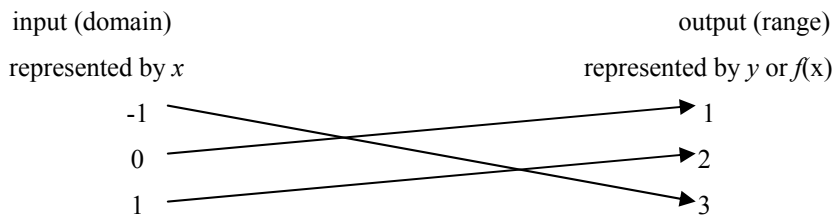
The symbol for the input to a function is often called the independent variable or argument and is often represented by the letter x or, if the input is a particular time, by the letter t . The symbol for the output is called the dependent variable or value and is often represented by the letter y . The function itself is most often called f , and thus the notation $y = f(x)$ indicates that a function named f has an input named x and an output named y and/or $f(x)$ as the following illustration of a function machine shows:

tinkering will be the subject of a separate paper.

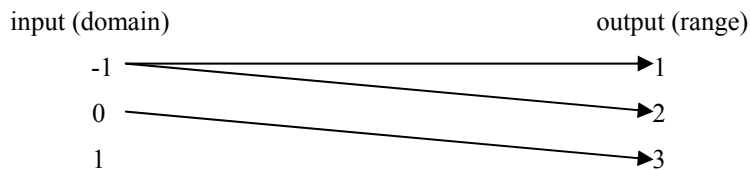


The exact nature of a function, as contrasted to a general relation (also referred to as an association) would help guide courts in distinguishing acts or omissions that are only relations that should not hold a person liable versus a function that would have the more rigorous requirements needed to impose liability due to a person's direct relation to the wrong caused. The following tables distinguish the types of relations needed for a function versus that of a mere relation.

Function



General Relation (Not a Function)



In the function every input causes an exact output while in a relation an input causes more than one output. Hence in a function the causation relation with the output is direct and exclusive while in the relation is not. Because of this utility of functions they are widely used in the sciences. Nevertheless, I have frequently wondered why functions being so critical for calculus and one of the most fundamental ideas in all of mathematics

with a proven record of success, why have they not become standard in legal analysis? Is there a reason for this exclusion that is related with keeping “outsiders” out through a flexible, arbitrary system of analysis?

In any case, I propose that once the word of the law and the words of recollection of facts are symbolized with numbers, mathematical methods such as: arithmetic functions of addition, subtraction, multiplication, and exponentiation (+, -, x, and ÷), as well as the axioms that accompany them, may be used to audit the dynamics of “insiders” and “outsiders.” These methods help search for the essentials, filtering the noise and clutter of irrelevant issues that surround them without falling into oversimplification or extremes. It is in that stage of analysis that jurists and other scholars will be able to recollect and grasp data for analysis under a *Nouveau Régime* that can audit legal analysis.

V. CONCLUSION

The justice system of the actual *Régime* through an overbroad conception of the person furthers the interest of “insiders” through legal analysis. The legal analysis of the justice system is a pseudoscience in which rigorous scientific methods of legal analysis do not exist. The pseudoscientific nature of the justice system ambiguously defines the concept of the person in order to have wide margins of interpretations that generate complexity and high degrees of entropy and disorder that exclude auditing. It is the duty of all, especially jurists, to understand simple things deeply from different dimensions. Divide and conquer; break difficult situations into easier ones.

We must examine issues from several points of view extending the hermeneutical and qualitative analysis to the quantitative by measuring and counting the underlying structure of the law: subjects/person, verbs/passive or active, actions or omission and objects/particular or general victim. We must advance the identification of structure, its shapes and forms that make the visual and physical impressions of the world using geometry and then further work with the uncertain using modern math for a novel auditing system of legal analysis.

In this path towards a *Nouveau Régime* based on redefining the *de jure* conception of the person by importing the number system from math into a *de facto* conception of the person will help reduce complexity while increasing the reliability of legal analysis.⁹² A universal legal analysis

92. The mathematical concepts presented are of general knowledge in the mathematical field; I cannot adjudicate authorship to any particular author or text. Nevertheless, for a simple reference regarding all of these concepts, see DAVID NELSON, *DICTIONARY OF MATHEMATICS* (3d ed. 2003) and E.T. BELL, *MEN OF MATHEMATICS, THE LIVES AND ACHIEVEMENTS OF THE GREAT MATHEMATICIANS FROM ZENO TO POINCARÉ* (Touchstone Book reprint. 1986) (1937).

further consensus through the conviction that standard reliable audits provide, and conviction furthers action that is needed for universal harmony. Finally, Norman Packard once stated, “A physicist is a mathematician with a feeling for reality,” perhaps one day we might say, “A jurist is a mathematician with a feeling for social behavior.”⁹³

93. JOHN D. BARROW, *THE CONSTANTS OF NATURE* 49 (2002); T.A. BASS, *THE PREDICTORS* (2000).