

THE INTERDISCIPLINARY TURN IN LEGAL EDUCATION

by Anthony D'Amato *

ABSTRACT. The nature of law and legal practice is changing with the addition of interdisciplinary studies to the law curriculum and joint-degreed scholars to the faculty. However, the accessibility of many disciplinarians in the rest of the university raises the question of the cost-effectiveness and opportunity costs of importing them directly into the law school. This Article criticizes the interdisciplinary turn on three grounds. First is the unlikelihood that the joint-degreed persons who join the law faculty will happen to be the ones that their colleagues will end up collaborating with. Second is the even greater unlikelihood that any given discipline can communicate usefully with another discipline. Third is the opportunity-cost factor: that the new interdisciplinary courses will crowd out an essential part of the legal discipline, namely, an understanding of the foundations and dialectical evolution of its forms of language.

We don't see things as they are, we see
things as we are. --- Anais Nin.

I. SCENARIO

The time is the present. The scene is an idealized faculty meeting at a law school.
An entry-level candidate with a law degree who will soon get her Ph.D. in sociology has

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been invited to talk about her current research, *The Signaling Effect on Compliance with the Law*.

The speaker starts by identifying her data base as 100 undergraduate students who were assigned conflicting interests in playing a hawk/dove game. She found that when a player suggested a result close to equilibrium the other players tended to coalesce around that result. Her statistically significant conclusion is that an articulated near-equilibrium outcome tends to produce that outcome.

The first set of questions from the audience comes from tenure-track professors who specialize in interdisciplinary and statistical work, several of whom have joint degrees. They praise her meticulous research. Their questions concern methodology, such as the parameters of her control conditions, whether a learning function can skew the statistical significance of iterations of the experiment, or whether the Wald chi-square is an adequate test for the equality of probit coefficients. This set of questions soon expires of its own weight.

Next we hear from the middle tier of tenured faculty. A professor tells a brief story about the introduction of traffic signals in the early 1920s. Although voluntary, they were immediately effective in reducing the traffic jams in intersections that were becoming increasingly congested. Only later, when free-rider problems (pardon the pun, he says) became frequent, did cities and towns begin to make the traffic signals legally compulsory. The questioner concludes by asking whether the speaker has discovered anything that lawyers don't already know.

The presenter replies that this is quite an interesting anecdotal illustration of her findings. But there are no quantitative statistics in the historical record. What she has accomplished with her hawk/dove game is to quantify the effect of signaling close to equilibrium within statistical significance, thus making a solid contribution to our knowledge of focal-point effects.

Another listener asks a follow-up question: is it cost-effective to spend time and energy proving something we already know? The presenter replies that, of course, nearly everything social scientists find is already known. They collect data, record, and test for statistical significance matters that others already “know” intuitively. Indeed, if a social scientist were to come up with a surprising outcome, it would be unlikely, at least at first approximation, to be correct.

A traditionalist sitting toward the back of the room now declaims with measured cadence: “I’ve listened with great interest to your presentation, but I’m having a hard time, if you’ll excuse me, figuring out what all this has to do with law. As far as I know, and correct me if I’m wrong, our students are paying us a high tuition to teach them to become effective advocates and negotiators. May I ask how it will help a student—or if I may put it in the vernacular, what are the student’s opportunity costs—to spend time learning that law has a focal-point effect?”

The speaker suppresses her urge to reply: “Well, you invited me here. You saw my paper in advance. If you don’t think I’m making a contribution to law, then I’m afraid I’ve wasted *our* time.” But she stifles this riposte.

Instead she responds diplomatically: “You raise a deep question. Perhaps in a bottom-line sense, social scientists are concerned about finding out what is true about the world. This is in contrast to lawyers who are interested in rhetoric in the Aristotelian sense of that word, that is, in persuading others irrespective of truth. I think it’s time to bridge the gap between these contrasting viewpoints. I believe that any law practitioner can be more persuasive if they have truth on their side.”

A old-timer way in the back of the room decides, in light of what now appears to be increasing momentum in favor of the candidate, *not* to ask the critical question: “Could you have formulated, researched and written your article if you had had no law training at all?”

II. THESIS AND PLAN

The candidate in the preceding scenario believes that law students should learn enough about sociology so they will be equipped to offer to the political branches their scientific prescriptions for changing, improving, and implementing the law. This message is succeeding. Law faculties across the country are running to catch the Interdisciplinary Express. They increasingly prefer to appoint candidates who, in addition to a law degree, have a graduate degree in the social sciences. Sometimes they appoint a person who only has a Ph.D. and not a law degree. As more interdisciplinarians become law professors, they tend to vote as a bloc for new candidates who are like themselves. The traditionalist’s question in

the fictional scenario—what does all this have to do with law?—soon will no longer be asked. For the very definition of “law” will have been expanded to include whatever the new interdisciplinary faculty is teaching.¹

My purpose in this Article is to hang a red signal along the railroad track—or at least a yellow one. Expanding the law can result in impoverishing it. Increasing the surface reach of the law while accepting shallowness may result in impeding our graduates’ ability to help real people in the real world who have real legal problems.

I begin, in Part III, by suggesting that there are two different kinds of cross-disciplinary collaborations which I call *division of labor* and *emergence*. Although the first is by far the most common, it is the second that motivates the law-school hiring of joint-degreed candidates. I will attempt to demonstrate in Parts IV through VI the sheer unreasonableness of expecting interdisciplinary collaboration—the “emergent” kind—to work, and the high likelihood that it will generate unintended consequences. My overall thesis is that no presumptive advantage ought to be accorded to interdisciplinary collaboration as a way of producing cutting-edge scholarship. I argue that we have no rational basis for expecting any discipline to contribute a problem-solving idea, or any useful idea at all, to another discipline. I make these claims even if the two collaborating disciplines are located within the mind of one joint-degreed person.

¹ Since some law students eventually become all the judges, they may carry to the bench this new interdisciplinary learning that whispers in their ears that their higher calling is to create good social policy even at the expense of the legal rights of one of the litigants. This issue is the subject of a work-in-progress which I tentatively entitle *Psychological Constructs as Determining Rights-Based or Policy-Based Judicial Decisionmaking*.

Taking Parts IV through VI individually, I examine the inherent insularity of disciplines in Part IV. Any given discipline will intentionally create barriers to communication with other disciplines, barriers which are not easily surmountable because they protect its disciplinary identity.

Part V then presents the core demonstration of this Article: if discipline A is to communicate usefully with discipline B—that is, if we are to have interdisciplinary collaboration that pays off—then discipline A must be internally coherent and its message must be rationally exportable. I examine the most transparent cases for coherence and rational exportability, concluding that useful interdisciplinary communication fails. The argument for all other fuzzier or harder interdisciplinary pairings follows *a fortiori*. (Part V may be skipped or postponed by the reader.)

In Part VI, I try to anticipate and deal with the major objections that are likely to be made to my thesis. These include the claim that hybrid disciplines have originated in interdisciplinary work and the alleged success of economic analysis of law as an interdisciplinary phenomenon. I argue here that law is a genuine discipline in every sense of that word.

Yet if the costs mentioned so far of importing other disciplines into legal education turn out to be *de minimis*, the remaining question is that of opportunity costs. Part VII argues that interdisciplinary additions to the law curriculum tend to crowd out the most important aspects of the discipline of law: a deep understanding of the foundation and evolutionary dialectics of the words and phrases that constitute the unique tools of effective legal advocacy, and the importance of

preserving people's rights by carrying out the legal dialogue in the unique disciplinary language that is sensitive to those rights, namely, the language of law-fact.

A brief and somewhat personal conclusion is offered in Part VIII.

III. WHY COLLABORATE?

Let us begin by fixing expectations: why would one expert wish to collaborate with an expert from another discipline? There are two possible kinds of cross-disciplinary collaboration which I will call *division of labor* and *emergence*. The first type accounts for over 99% of all useful cross-disciplinary collaborations, not only in law but in every field of human study.² But it is the second category, emergence, that excites our imagination and motivates faculty-appointments committees to prioritize joint-degreed candidates.

A. DIVISION OF LABOR

Many topics of interest and importance in today's complex world straddle two or more disciplinary areas. Health care, for example, requires having doctors to identify diseases, engineers to design prosthetic devices, pharmacologists to prescribe medicine, nurses to work in rehabilitation venues, and statisticians to track patients' records. A Health Care Center, such as one established in a

² However, if we add up all the useful cross-disciplinary collaborations, the total is minuscule compared to the number of useful within-disciplinary collaborations.

university, would bring these experts together to discuss mutual problems and ways of using their own expertise to examine their assigned slice of the health-care pie. Or consider an Urban Studies Center in a university that brings together sociologists, political scientists, psychologists, specialists in race relations, anthropologists, engineers, law enforcement officials, and cartographers—all invited to collaborate in offering solutions to problems such as ghettoization, degradation of public housing, illegal distribution of drugs, and so forth. No one expects these experts to solve each other’s problems (which would be true interdisciplinary collaboration), but rather to work separately in solving those pieces of the urban phenomenon that are susceptible to their own expertise. They spend some time talking with one another in order to stake out the boundaries between them.

The renowned physicist Nancy Cartwright observed that when the discipline of statistics is successfully extended to other scientific discourses, it is done in ways that confine the statistics to limited domains within those other discourses.³ She found no necessary connectivity between statistics and the discipline that imports it. In other words, they are all division-of-labor collaborations. Two or three decades ago, statisticians were in great demand for the contributions they could make to numerous scientific disciplines and even the discipline of law. But now, Professor Cartwright’s point can be made just by noticing that statistical programs and software are presently available that can be

³ Nancy Cartwright, *The Limits of Exact Science, from Economics to Physics*, 7 Perspectives on Science 317 (1999), downloadable at http://muse.jhu.edu/journals/perspectives_on_science/v007/7.3cartwright.pdf. The terms “discourse” and “discipline,” while connotatively different depending on context, are used more-or-less interchangeably in the present Article. What applies to one applies as well to the other. See also n.70, *infra*.

plugged in to do the “collaborative” job. Person-plus-computer-program is an effective type of division-of-labor collaboration.⁴

There is no doubt that law must continue to latch onto the real world by accepting (with cross-examination!) the factual inputs of other disciplines. Law has been doing this for over a century, but it is now more important than ever. Nothing in the present Article should be construed as opposing the increasing collaboration of law and other disciplines on a division-of-labor basis.

B. EMERGENCE

The second kind of collaboration for which the term *interdisciplinary collaboration* ought to be reserved, is one that is expected to produce new and emergent ideas. Although successes of this type are extremely rare, it is the emergent collaboration that is currently being pursued by law schools that are hiring faculty members who have joint degrees in law and a second discipline such as history, philosophy, literature, or most typically a social science. These joint-degreed experts are expected, in addition to being challenging teachers, to produce innovative scholarship with greater frequency than persons with only a law degree.⁵

⁴ Many published essays that purport to combine law and social science turn out on inspection to address a limited domain in law that is susceptible to social-science methodology. For example, in *Furman v. Georgia*, 408 U.S. 238 (1972), a statistically significant higher probability of capital punishment sentencing for black defendants than for white defendants led the Court to invalidate the death penalty in several cases where such discrimination was shown. The social-science methodology involved in the *Furman* cases went to a factual question within the legal domain. The Court’s ruling in the case was a pure question of law *given* the statistical facts.

⁵ This second category of interdisciplinary collaboration is presumed to go on within the head of the person who has a joint degree. However, I draw no qualitative distinction between external or two-person collaborations, and internal or one-person collaborations.

Thus a candidate with an “A-” average in law school and an “A-” average in graduate school may be preferred over an “A+” candidate with just a law degree.⁶

What law schools are counting on is an expected synergy and two-way feedback between the two collaborating disciplines. Synergy and two-way feedback are process notions; what they are expected to produce, via some miracle, is an original idea or a solution to an important legal problem. Because the new idea *emerges* from the collaboration, the currently fashionable term “emergence” is perhaps a good way to describe it. A simple example of emergence is a tray full of water: take heat away from it by placing it in a refrigerator, and it turns to ice. Imagine a person who has spent his life in a tropical climate and has never seen nor heard about ice. If you tell him you can take water and make it so hard that he can walk on it, he might think you were trying to sell him something. Ice is an emergent property of water. Indeed, water is an emergent property of ice.⁷

A famous example of emergence from the mind of a person who was an expert in more than one discipline is Gregor Mendel’s discovery of genetics. Mendel had studied botany and physics at the University of Vienna, then became an Augustinian monk in Brno. For eight years he experimented with white and red

⁶ My self-styled *Myth of I.Q. Additivity* is that any two collaborating late-nineteenth-century physicists would have had a total I.Q. greatly exceeding Einstein’s, and therefore should have beaten him to all his twentieth-century discoveries.

⁷ Scientists usually refer to changes of state from liquid to solid to gas as *phase changes*. One of the more intriguing examples of emergence is the behavior of the much-studied slime mold. See Steven Johnson, *Emergence: The Connected Lives of Ants, Brains, Cities, and Software* 12-15 (2001). Typically one might see a reddish orange mass coating over a few inches of rotting wood on the floor of a forest. The slime mold (*Dictyostelium discoideum*) is a cluster of distinct single-celled units living out their lives individually. But if they run out of food, they will coalesce into a larger unit that will begin a leisurely crawl across the forest floor toward a source of nutriment. This living swarm is an unexpected emergent property of the individual cells. Unlike ant and bee colonies that have certain individuals known as pacemakers (the queen bee, for instance) that order the other cells to begin aggregating and to move in a certain direction, the slime mold consists of cells that have no pacemakers. They simply organize themselves and begin their travels. It is still a mystery how they do this.

pea flowers in the monastery garden, then published his observations in 1865.⁸ He had run over 7,000 experiments with the pea plants and “saw” not only that the white and red characteristics of the plants were inherited but that there was a 3:1 ratio between traits that he labeled dominant and recessive. Later scientists inferred from Mendel’s results the presence of chromosomes, and then genes, that served to transmit the traits from parent to offspring. Mendel became, posthumously, the father of the gene.

However, nearly all new ideas emerge from *within* a discipline. Einstein was a physicist; when he conceived of relativity, he learned just enough mathematics to make his findings mathematically rigorous. Heisenberg was also a physicist who happened to hear of a moribund field of mathematics known as linear algebra. Perceiving its fit with the uncertainty principle of quantum mechanics that he was developing, Heisenberg studied linear algebra and then applied it to his research. Neither Einstein nor Heisenberg invented the mathematical apparatus that they perceived they needed; they were simply lucky that it was available. Helmholtz was not as lucky. His discovery of the doctrine of unconscious inference—that fact that we perceive, in part, what we *expect* to perceive based upon past learning—required for its complete theoretical specification a nonlinear, nonlocal, and nonstationary mathematics. That mathematical apparatus was not worked out until a hundred years after Helmholtz died in 1894.⁹

⁸ So far ahead of his time were his conclusions that they were ignored until the turn of the century.

⁹ See Stephen Grossberg, *Nonlinear Neural Networks: Principles, Mechanisms, and Architectures*, 1 Neural Networks 17, 19 (1988).

Today, unidisciplinary scientists and law professors find that when they need to test quantitative results of observations or experiments for nonrandomness, they can simply access statistics software that can mechanically churn the data for statistical significance. Hand-held calculators can solve derivative and integral calculus problems that used to require advanced work in mathematics. Or if a practicing lawyer needs empirical research to augment his argument, he can simply hire the appropriate econometrician, statistician, public-survey specialist, sociologist, or anthropologist and explain what he is looking for. The lawyers certainly do not handle the social-science work themselves; at their hourly rates it would not be financially reasonable for their clients to absorb the additional cost.¹⁰

What are the odds of a new idea emerging from a truly interdisciplinary collaboration like the one that coalesced in Mendel's mind? Suppose a law professor has a few inchoate ideas about solving the puzzle of prospective overruling.¹¹ She reads many cases on the subject and lists them. Finding that the law literature on the subject is unsatisfactory and question-begging, she looks outside of law for help in formulating a principle or two that could solve the problem. She is not looking for help in quantifying the case results; that will come later when she figures out how to categorize them. Rather she is looking for

¹⁰ Is there a false assumption in today's educational reforms that the graduating students will be called upon to do the social-science work themselves and therefore must be (partially) trained to do it?

¹¹ Here's a simple illustration of prospective overruling from my litigating experience. A trial judge delivers an "Allen charge" to a deadlocked jury—a quasi-threat to them to break the deadlock. The jury then returns a verdict of guilty. On appeal, the reviewing court finds that the Allen charge was illegal but that it was "harmless error" because of the overwhelming evidence of guilt. The court affirms the verdict and adds, "From now on, the Allen charge shall be illegal and never be used again in trial courts in this jurisdiction." However, in the next criminal case, the trial judge again delivers an Allen charge. On a sidebar objection by defense counsel, the judge explains: "I am not bound by the wishes of the court of appeals, only by its holdings. A holding is something that supports the decision in the case. The Allen charge in the recent court of appeals case was pure dictum. To make it a holding, the court would have had to reverse the decision below."

explanatory principles that will (a) help her organize the case data; (b) explain existing decisions; and (c) predict, and maybe influence, future cases.¹² She is in short looking for inspiration. If she decides that inspiration might likely come from collaborating with a political scientist, she could call or email some fifty political scientists at her own university, another two hundred at universities and colleges near her, some five to ten thousand at colleges and universities around the country, and another twenty thousand English-speaking experts in political science around the world. Equal or greater numbers of potential collaborators can be contacted if she thinks that help is most likely to come from a social scientist, or from an anthropologist, biologist, physicist, economist, psychologist, or classicist. With the advent of email, her transaction costs are slight: she sends out a one-paragraph announcement of her topic with a good chance of locating some experts in the field she has identified who might have the time and interest to work with her on her project.

Let's say she has chosen to work with a psychologist. To find one psychologist collaborator in a field of fifty thousand is quite a different proposition from finding one collaborator in a field of just one or two. Yet the latter is what she faces if she asks her law-faculty colleagues, two of whom might hold joint degrees in law and psychology, to collaborate with her. Her joint-degreed

¹² Many advocates of interdisciplinary collaboration between a lawyer and a social scientist do not seem to sufficiently appreciate the fact that the usefulness of the social scientist begins *after* the lawyer has read, sorted, and categorized the cases. Then the social scientist can apply statistical methodology, multivariate analysis, and other methodologies to the given set of cases. For any countable set of things must contain similarities among its elements that make counting (and aggregation) useful. As George Kelly acutely observed, "Since the abstractive judgment of what it is that has been replicated is the basis for measuring the amount of similarity, we find that the concept formation task which precedes the statistical manipulation of data is basic to any conclusions one reaches by mathematical logic." George A. Kelly, *A Theory of Personality: The Psychology of Personal Constructs* 53 (1963).

colleagues may have no interest in the subject of prospective overruling, might have several projects of their own that are taking up all of their time, or might simply be uninterested in “doctrinal” questions. If she wants a collaborator, she will probably have to advertise for one.

Now suppose after corresponding with a few psychologists by email, our author decides that she might be better off collaborating with an anthropologist. Although thousands of them can be contacted by phone or email, it so happens that her law faculty has not yet appointed a person with a joint degree in law and anthropology. Hence her chance of finding a collaborator in the outside world is cosmically higher than her chance of finding one among her law colleagues.

The probability calculations do not change if our author herself has a joint degree. Suppose her Ph.D. is in political science. She knows after some reflection that the political-science answer to prospective overruling is that it’s just a question of the power of the court of appeals over the trial courts. If the court of appeals has enough power, it can intimidate lower-court judges to follow its wishes on prospective overruling; otherwise, the lower-court judges may decide to disobey the appellate court on matters of this type. Our author decides that her training in political science does not seem to yield the kind of insight that would get her intended article into a good law journal, especially since measuring the effective power of the court of appeals seems to depend upon whether lower-court judges choose to obey or disobey it. (She has mentally encountered this vicious circle of power and law many times before.) So she decides to look for an external collaborator.

Despite the huge odds against an interdisciplinary collaboration within a law faculty that would lead to an emergent idea, law schools have bought into the idea of interdisciplinary collaboration. Their reasoning seems to be akin to that of a compulsive buyer of lottery tickets.

Many faculties are willing to take that kind of chance, especially when they see other faculties doing it and assume the others must know what they're doing. Accordingly, what I shall try to show in Parts IV and V of this Article is that unlike a lottery ticket where there is at least a winner, interdisciplinary collaboration is unlikely to have any winner at all. I will challenge the basic assumption that two collaborating disciplines may give rise to an original idea. To show this, I will begin in Part IV with a description of the inherent insularity of disciplines. Then, in Part V, I offer a more rigorous proof of the translation problem, that is, the extreme unlikelihood of any one discipline's being able to communicate meaningfully with another discipline.

IV. THE INSULARITY OF DISCIPLINES

To investigate the possibility of useful interdisciplinary collaboration, we first need to ask what disciplines are for. Outsiders might give the standard answer: disciplines aim to add to the world's stock of knowledge. An insider, however, is more apt to think that the way he sees the world *constitutes* knowledge of the world. Although the insider may be called upon from time to time to contribute his

expertise to the world's problems and issues, his primary focus is to contain that expertise among insiders. This can be seen by the way that disciplines recruit new members. An acolyte is expected to learn the discipline's wisdom through hard study, dedication, and passing rigorous examinations. (Any Asian martial-arts movie will illustrate this labor-intensive process of indoctrination.) Over the years, the discipline itself becomes more intricate and arcane due to the cumulative contributions of its members. As acolytes are slowly introduced to the core secrets of the discipline, they naturally find it more stimulating to converse with each other than to talk with outsiders. They can converse at the cutting-edge with speed and efficiency. They share the excitement of getting closer to bedrock truth about the world. But when they talk with outsiders, they have to "bring them up to speed," a process which could take months if it works at all. Thus the insiders tend to remain on their isolated island, talking mainly to each other, commenting on drafts, or writing reviews of each other's books. The circle is completed when the insiders look to the discipline itself for answers to their contested points.¹³ We hardly ever hear of an internal disciplinary argument that ends on a note like "our discipline seems to have run out of answers; let's turn to psychology or anthropology and see if they can help us." Would a lawyer ever say, "The fine print in this insurance contract baffles me. Perhaps I should ask a sociologist for some help"? Or "the contract has an 'act of God' escape clause; should I call up a theologian?" Instead, any given discipline will inevitably provide an answer to any question because it

¹³ In legal practice, judges provide the answers. The judge is also a lawyer, a true legal disciplinarian. The three-way conversation between plaintiff's attorney, defendant's attorney, and judge is an esoteric event. Ask any layman who listens to an appellate argument: if candid he is apt to say that although he understood every single word (the law got rid of Latinisms centuries ago), he had no idea of what they were arguing about, or why or how. Law, *pace* Judge Posner, is a true discipline. See Part VI, *infra*.

must maintain its privileged view of the world—even if the answer is that the question itself is trivial or not worth asking.

As outsiders watching these communications circling around Doctrinal Island, we may interpret the process as securing conformity to the discipline's proprietary truths—a kind of recurring and self-reinforcing membership ritual.

We get a deeper view of the pressures toward disciplinary conformity when we look at the process by which a person becomes an expert in a discipline. The acolyte or graduate student is discouraged from choosing a thesis or dissertation topic that challenges bedrock disciplinary material. Instead she is encouraged to find an unexplored niche within her chosen discipline so that she does not trespass upon territory staked out by the elders who preceded her. Although a Ph.D. dissertation may be trumpeted to the external world as a contribution to knowledge, its real purpose is to ensure that the author has located her work within a doctrinal cubbyhole while displaying the requisite humility.¹⁴ Her footnotes must genuflect to the discipline's prominent members. Although her dissertation in her own mind might raise more questions than it answers, she finds that her Ph.D. committee is not overly troubled by this fact. Indeed, the committee seems quite comfortable with unanswered questions. The acolyte may realize at this point that the members of her committee were once graduate students who also worried about unanswered questions but somehow passed their Ph.D. exams. Perhaps a more heretical thought enters her mind: that the innermost core of her discipline contains nothing

¹⁴ Many European Ph.D. candidates spend as much as half their time at their oral examination reassuring their interlocutors that they are not going beyond a small and hitherto untouched gap in the discipline's domain.

but unanswered or unanswerable questions. Maybe this is its deepest and most dangerous secret, known only to its disciples.

The foregoing descriptions may remind some readers of religions. An important difference is that most of the world's religions (Judaism may be an exception) seek to recruit new members even at the cost of watering down their core truths in order to make them more attractive to lurkers. Their preachers want to spread the word of the Deity even if that word needs alteration. By contrast, secular disciplines want to monopolize, not share, their core truths. They are afraid that if their core truths are exposed, they may be derided as nonsense. Religions do not have the latter fear. Since they are faith-based rather than evidence-based, the more preposterous their claims the more likely they may cause the kind of bewilderment and self-doubt that operate to lure the lurker deeper into the religious fold in search of answers that will never be found.¹⁵

Unlike religions, academic disciplines play as close to the vest as possible, short of running out of initiates altogether. They guard their secret literature, methodology, language forms, and logic, by wrapping them in protective jargon. This protected archive after all constitutes their intellectual capital, and no one within the discipline has an incentive to squander it. Disciples learn not to give away their hard-earned secrets for free. They have derived from the discipline a privileged way of understanding the world. This privilege would self-dissipate if outsiders could access it freely or with little cost.

¹⁵ See Richard Dawkins, *The God Delusion* 199 (2006) (“Virtuoso [religious] believers who can manage to believe something really weird, unsupported and unsupportable, in the teeth of evidence and reason, are especially highly rewarded.”)

A closer affinity with academic disciplines than religion is the sect, cult, caste, or tribe.¹⁶ Disciplines and sects share the trait that their primary audiences are themselves. They proselytize their own initiates at great lengths before even thinking of proselytizing outsiders. Internal reiteration and refinement of the discipline's core ideas always take priority. Although recruitment of outsiders is usually welcome, many disciplines throughout history have opted to self-destruct rather than advertise for new members. Since any recruitment at all involves at least the sharing of some of the discipline's peripheral secrets, there is an ever-present worry that enlightening outsiders may increase the discipline's vulnerability to attack. This recruitment dilemma may be one source of bias against candid interdisciplinary communication.

Disciplines and cults revel in their ethnocentrism. For example, sociologists define their doctrinal perspective against a background that includes sociology's differences from psychology, history, anthropology, economics, and other disciplines.¹⁷ Informal conversations among sociologists reveal how much they like to "put down" neighboring disciplines like anthropology ("anthropology isn't even a science"), and students often overhear the same kind of talk among anthropologists ("sociology is how you squander millions of taxpayer dollars proving that schoolchildren learn more in small classes than large classes"). When Princeton built the Institute for the Advanced Study in 1930, the anti-collaborationist founders decided to protect physicists such as Einstein, Gödel, Oppenheimer, and Von Neumann from related-science disciplinarians by choosing the History Department as the Institute's next-door neighbor.

¹⁶ See generally Tony Becher, *Academic Tribes and Territories: Intellectual enquiry and the cultures of disciplines* (1989). For an in-depth study of a particular sect, see David van Zandt, *Living in the Children of God* (1991).

¹⁷ See, e.g., P. Burke, *History and Social Theory* (1992); D.B. Massey, *Negotiating Disciplinary Boundaries*, 47 *Current Sociology* 5 (1999)..

The hallmark of separateness is found in a discipline's jargon.¹⁸ Separateness becomes a self-fulfilling prophecy to the extent that outsiders are perceived as not intelligent enough to understand or penetrate the discipline's special forms of language. Jargon develops naturally inside all disciplines, sects and cults included, just as geographically isolated communities develop their own patois or sports teams their own slanguage. The discipline itself welcomes jargon as an ingroup solidarity device. Donald Campbell observed that "what is despised as jargon by the outgroup may be the shibboleth of adequate professional training by the ingroup."¹⁹ Insiders, after all, do not regard their talk as jargonized but rather as an efficient shorthand way of communicating a dense amount of contextually-rich information. If outsiders hear it but don't get it, then perhaps they are not as smart as insiders. (Of course, outsiders are not supposed to get it. If they're determined to get it, they will have to submit to the training process and become insiders.)

But jargon, in the sense of unusual or esoteric words, does not quite capture the idea of internal meaning. The term "register" may be more appropriate. As suggested by Tony Becher in his aptly titled *Academic Tribes and Territories*:

[I]n those disciplines which pride themselves on not being "jargon-ridden," [their] communication none the less creates what linguists would call its own register – a particular set of favored terms, sentence structures, and logical syntax – which is not easy for an outsider to imitate.²⁰

¹⁸ See Theodore W. Adorno, *The Jargon of Authenticity* (1973).

¹⁹ Donald T. Campbell, *Ethnocentrism of Disciplines and the Fish-Scale Model of Omniscience*, in Muzafer Sherif & Carolyn W. Sherif, *Interdisciplinary Relationships in the Social Sciences* 328, 337 (1969) [hereinafter Campbell].

²⁰ Becher, *supra* n.16, at 24.

As the acolyte becomes more attuned to this new register, she finds that the discipline's gravitational force becomes stronger. This force begins to take on a compulsion akin to that of logic. An acolyte's felt view of the internal coherence of the sect or discipline she is entering seems to *logically* compel her attention. A logic is something she cannot rationally refute. The logic of her discipline is nothing less than its secret key to understanding everything of importance in the universe. It enables her to believe that the sect or discipline that she has chosen exists in celestial harmony with the world. She learns to understand that the secret logic of the universe is equivalent to the secret logic of her sect or discipline. The world may be mysterious to others, but it is coherent to her because she owns a privileged tunnel into its inner wheels, levers, pulleys and gears.

In mastering a discipline, the acolyte absorbs its values and makes them her own. This is not as transformative as it sounds, because her initial decision to choose a discipline was based in part on her pre-existing comfort level with its perceived values. However, her entering values soon become shaped, reorganized and reinforced with each expenditure of psychic energy devoted to absorbing the discipline's core mysteries. She becomes increasingly self-conditioned to believe in the truth of her discipline and its ability to show her a way to solving the problems, issues, and puzzles that engage her mind. These puzzles are exciting, and to boot the university pays her for thinking about them. For example, if she chooses cultural anthropology, she might not have been initially interested in the problems of the natives of Papua, New Guinea. But after listening to some professors whom she finds deeply persuasive, she will go to Papua because she has

become convinced that the problems of cultural anthropology are brought to the surface by the deep study of specific situations. Although her research has not answered many questions about Papuan society²¹ it has given her a far more important perspective upon the questions of cultural anthropology—with native help.

Over time, the more intellectual and psychic capital the acolyte spends in learning the doctrine, the more disposed she becomes to believing in its truth. She may not even notice that the discipline's unanswered questions are gradually morphing into unanswerable questions.

As the acolyte advances toward ordination within the discipline, she learns above everything else to protect its linguistic forms. For it probably dawns on her sooner or later, as it probably dawns upon most experts sooner or later, that the most important thing the discipline has given them is its language and formulas. Judge Posner told me during a break in the radio debate we were having that the sole purpose of the first year in law school is to teach students a new vocabulary. (He added that the remaining two years of law school were unnecessary.) Sometimes the proper pronunciation of the jargon is the key to authoritativeness. When professors of medicine lecture in the classrooms or even talk in informal settings, their expertise seems connected to how rapidly and effortlessly they can toss off terms like myocardial infarction, portal encephalopathy, choledocholithiasis, and mediastinotomy. In the extreme, consider the discipline of

²¹ Margaret Mead's pioneering studies of Samoan and Papuan natives, where she *did* try to answer questions about their social practices, have been thoroughly debunked. See Derek Freeman, *Margaret Mead and Samoa: The Making and Unmaking of an Anthropological Myth* (1983).

postmodernist literary criticism in which the jargon actually *replaces* the literary text.²²

Given the impetus of any given discipline toward gussying up its talk, do we have any rational basis for assuming that if we put two disciplinarians in the same room they can *usefully* engage in collaboration? How, if at all, can two different disciplines communicate synergistically with each other to produce an emergent idea?

This question was uppermost in Rudolf Carnap's mind in the 1930s during his participation in the debates in the "Vienna Circle." Some of the world's greatest intellects participated from time to time: Wittgenstein, Gödel, Russell, Tarski, Ayer, Popper, Turing, and Carnap himself. The on-going topic of debate was idealism vs. materialism. As Carnap ruefully observed in his *Intellectual Autobiography*,²³ neither side seemed able to communicate meaningfully with the other. This shortcoming was certainly not due to a failure of intelligence. Rather, Carnap attributed the communication impasse to the specialized jargon that each side used. Each discourse had its own logical structure, its own syntactical rules, and its own sense of coherence that seemed to be non-exportable to the other discourse. Carnap suggested that it might be more profitable for the observer/analyst to turn his attention away from the merits of the idealism-materialism debate and focus instead upon its linguistic forms.

²² This self-destructive development has given rise to a fear that literature, one of the most academic and traditional of disciplines, is in serious danger of extinction. See Alvin Kernan, *The Death of Literature* (1990).

²³ See Rudolf Carnap, *Intellectual Autobiography*, in Paul Arthur Schilpp (ed.), *The Philosophy of Rudolf Carnap* 2, 22-67 (1963).

As an example of what Carnap may have had in mind, suppose Marxian reasoning is sufficient to convince Marxists of the truth and explanatory power of “dialectical materialism.” This reasoning may attract outsiders to Marxism, but that is not the same as saying that the non-Aristotelian reasoning allegedly subsumed within the term “dialectical” exerts a logical force upon outsiders. We external observers believe ourselves to be rationally free from the seduction of Marxist “logic.” We are able to reject the concept or method of dialectical materialism if it does not seem on its own merits to help explain any part of our own view of the world. The insider may use the term as a mantra, but it is a useless or misleading mantra to us on the outside.²⁴

Carnap discovered that the most that was accomplished in the Vienna Circle seminar was that neither the materialists nor the idealists were able to *disprove* the other side’s internal logic. Absent such a proof, external observers such as Carnap find themselves in an agnostic position: they do not know whether the discourse they are looking at is consistent or inconsistent.²⁵ If it is inconsistent, then of course they are wasting their time seeking enlightenment from it. But if it is internally consistent, then maybe they should devote more time in trying to understand what its expert is trying to tell them.²⁶

Agnosticism is indeed the only intellectually supportable starting point to take regarding another discipline. If you then come to believe that the other discipline is built upon contradictory assumptions, you would be wasting time in considering it. If you

²⁴ What might be deemed the “Closed Circle” of professors of constitutional law has a similar mantra: “originalism.” What does it mean? Well, if you’re not one of *them*, you’ll never find out.

²⁵ Obviously an unwillingness even to be agnostic will simply cut the conversation short, in which case the problem of communication addressed in this Article would become irrelevant.

²⁶ When one thinks of a discipline’s consistency, Gödel’s proof comes to mind. However, Gödel did not prove that mathematics was inconsistent. He proved that there are some mathematical propositions whose truth or falsity within mathematics cannot be proved. See also n.48, *infra*.

come to believe it to be true, you will already be partially or wholly inside that discipline. If you don't know, then it is reasonable to remain agnostic.

If I am agnostic in respect of Marxism, I can still be willing to accept that practitioners of Marxist discourse seem to be able sincerely to communicate with each other without inconsistency. I fully expect that the truth-claims of Marxists seem to be validated for them by their belief in the internal coherence of their discourse. Yet my liberal agnosticism has not taken me very far. Just because Marxists believe their discourse to be consistent doesn't make it so. If I knew for sure that Marxism was internally consistent, then I would have to take Marxist principles quite seriously. But if I am only agnostic, then I would have to *translate* Marxist logic into terms I can understand before I can determine whether it is helpful to my own research projects. I cannot accept Marxist logic on its own say-so because of the possibility that its logic is inconsistent.

The expert has the mirror-image problem in convincing an outsider about the truth of his discipline. Suppose an expert in theodicy believes that the following two tenets of his discipline are logically consistent: a God who is perfectly good created the world, and the world contains a great amount of gratuitous suffering. To an outside observer, agnostic or not, these two propositions would probably appear to be mutually inconsistent—not just linguistically but substantively. If the theodicy cannot prove *to the outsider* that the two propositions are not mutually inconsistent, then it would be irrational for the outsider to spend any more time conversing with the theodicy on theological matters.

What can we conclude about a person who has become an expert in two disciplines, such as law and political science, or law and sociology, or law and economics? Is she able to communicate between the two disciplines *in her own mind* so that there will be mutual feedback resulting in emergent ideas that would not have been imagined had she only been an expert in one of those disciplines? It is not inconceivable that our minds could translate between two disciplines, but we shall see in the next Part that the translation barrier exists irrespective of whether the disciplines are in one person's head.²⁷

Carnap's question, to which he devoted the remainder of his life yet failed to solve, was whether it was rationally possible to communicate between disciplines so as to generate new ideas or new solutions of puzzles that would have remained unconceived or insoluble by the disciplines working separately. My project in the next Part is to take up his unfinished work. I offer a formal proof that interdisciplinary communication that generates new ideas is extremely unlikely because of the incommensurability of the world-views and linguistic forms of the collaborating disciplines. Some readers may wish to skip or skim Part V. Some may have been sufficiently persuaded by the infinitesimal probabilities discussed in this Part IV to view the forthcoming Part V as overkill. However, if we are indeed at a crossroads in the teaching of law, the incommensurability thesis that takes up Part V could be significant even if excessive.

²⁷ Bilingual persons, for example, report that they are able to "think" in one language or the other, but they do not report a blending of the two that leads to new ideas that are inexpressible in just one or the other language. A person may be an expert in international law and the political science of international relations, yet when it comes to melding the two in his brain, he may find that there are no synaptic connections: that one seems to be about legal restrictions upon power, and the other about power trumping all legal restrictions. (An expert in two disciplines is likely to be of two minds on a given subject.)

V. INTERDISCIPLINARY COLLABORATION IS NOT COST-EFFECTIVE

In this Part, I set out a formal proof of the non-translatibility of interdisciplinary communication. I will focus the clearest possible cases for translatability and claim that all other fuzzier pairings follow *a fortiori*.²⁸ I envisage my proof as shifting the burden of persuasion to those advocates of interdisciplinary communication (or those persons with expertise in two disciplines) to justify the time and effort they have expended on interdisciplinary collaboration. The conclusion I reach in this section leads me to assert with some confidence that in the long run and over many cases, it is clearly cost-ineffective to expect that interdisciplinary work will lead to original or useful ideas or to the solution of important puzzles and problems.²⁹

Let us begin by defining some terms and incorporating them into a summary of what has been said so far. We will call the “home discourse” the one that is trying to communicate ideationally to another discipline; the latter will be called the “target discourse.” In the above example, Marxism was the home discourse and I, the external observer, was the target discourse. If a home discourse can communicate meaningfully with a target discourse, then let us say that the home discourse has “rational

²⁸ A definitive proof including all pairings of disciplines is not possible because new disciplines continue to come on stream.

²⁹ Although many readers may have anecdotal experience that they view as indicating the contrary, I offer a proof that suggests that they may have been looking at division-of-labor collaborations. Of course, there are rare exceptions (e.g., Gregor Mendel), which is why I couch my thesis in terms of cost-ineffectiveness.

exportability.” Using these terms we can summarize five tentative results reached in this Article so far:

(1) If an expert’s home discourse is objectively consistent, it does not necessarily mean that what she says can be usefully translated (is “rationally exportable”) to a target discourse.

(2) It is not necessarily cost-ineffective to listen to a specialist if we do not know or cannot find out whether her home discourse is consistent. Such a stance is called agnostic.

(3) If her home discourse is objectively inconsistent, it is not cost-effective for us to continue the conversation or collaboration.

(4) The logical consistency of the home discourse is a necessary but not sufficient condition for meaningful interdisciplinary communication.

(5) The rational exportability of the home discourse is a necessary but not sufficient condition for meaningful interdisciplinary communication.

A. TWO CRITERIA FOR TRANSLATABILITY

A discourse that could collaborate meaningfully and productively with another discourse would have to be both internally coherent and rationally exportable. Does any such discourse or discipline exist in the world? Let us begin by bracketing the possibilities. Suppose there are two non-trivial, mutually exclusive home discourses, A and B. Assume that A is rationally exportable and B is internally coherent. Our simple matrix would then look as follows:

	Internally Coherent	Rationally Exportable
A	?	yes
B	yes	?

Since A and B are mutually exclusive, it follows that if we can replace *either* question-mark with a “yes” in *either* of the A or B rows, then we will have demonstrated the combined internal coherence and rational exportability of at least one discourse. Either finding would falsify my thesis.

B. TESTING FOR INTERNAL COHERENCE

Carnap did not know whether there was *any* discourse that, in the terms I’m using here, was both internally coherent and rationally exportable. To explore for such a discourse, he decided to focus his attention on one that was already generally accepted as meeting one of these criteria. If he proved that it indeed met that criterion, he could set himself the goal of determining whether it also satisfied the other criterion.

In looking for a candidate discourse, Carnap must have thought it would take longer to start with one that was internally consistent rather than starting with one that had rational exportability. After all, he had already failed to find rational exportability in either the materialistic discourse or in the idealistic discourse advanced with such fervor in the Vienna Circle, even if he assumed (agnostically) that they were both internally coherent. So he appears to have decided (as I infer from his later life's work) to proceed in the reverse direction and identify a discourse that was rationally exportable. That would appear to solve the hardest criterion. If he could start with a discourse having rational exportability, he could go on to investigate whether the discourse was internally consistent.

A discourse that is rationally exportable would be labeled an "A" discourse in the above matrix. Carnap did not waste much time in choosing probability theory as his rationally exportable discourse. Probability theory originated in the seventeenth century and has since conquered the world of science and games in applications to discourses as far apart as quantum theory, military strategy, and meteorology. There is little doubt that it has succeeded in being rationally exportable to many fields of human endeavor. There was no need for Carnap to spend time in formally proving the rational exportability of probability theory.

Once we have assigned probability theory to the "A" discourse in the above matrix, the remaining step is to prove that it is internally coherent. Probability theory has been used so often and so successfully that proving its internal coherence would also seem to be easy. Carnap sat down and began working on a proof. Alas, the task took

him the rest of his life. He did not reach a conclusion. His only posthumous consolation is that no one after him has proved it either.

The puzzle about the internal coherence of probability can be briefly summarized. There are two kinds of probability: long-run (or frequentist) probability and one-time (sometimes called “subjective”) probability. The odds of getting more than 50 tails in 100 tosses of a fair coin is an example of the former; weather forecasting is an example of the latter. Since the factors leading to a prediction of tomorrow’s weather are indefinitely (and perhaps continuously) variable, they cannot be extrapolated from or constructed upon past events. Nevertheless it is perfectly appropriate to inquire about the probability of the occurrence of a unique event. (It happens all the time in criminal trials based upon circumstantial evidence.) What does the meteorologist on Channel Seven mean when she says that the chance of rain tomorrow is 70%? Since she is not talking about long-term probability, but only about a discrete event that will or will not happen tomorrow, she must be talking about her own degree of confidence in her prediction. If she says “rain is 70% likely,” she is in effect saying that she would bet \$7 on rain happening tomorrow against any other person’s \$3 bet that tomorrow it will not rain, winner take all. One-time probability is accordingly a measure of the observer’s degree of confidence in the expected outcome.³⁰

However, we can anticipate that the observer’s degree of confidence might vary across observers (as it obviously does in betting on sports events). Thus one-time probability appears to have an element of subjectivity in it, whereas frequentist probability appears to be objective. Carnap’s puzzle was to figure out how to objectify

³⁰ For further discussion of subjective probability, see Anthony D’Amato, *The Limits of Legal Realism*, 89 Yale L.J. 468, 483-91 (1978).

one-time probability and then to align it logically with frequentist probability (he was not interested in the converse, which would be to subjectify long-term probability and align it with one-time probability³¹). Perhaps one-time probability would turn out to be a subset of frequentist probability. Or they might both turn out to be subsets of a new general theory of probability.

Thus, the puzzle whether probability theory as a whole is consistent turns on the logical reconciliation of its two (equal) branches of frequentist and subjective probability. Although volumes have been devoted to this puzzle since Carnap's pioneering work, there is still no generally accepted result.³² It is a remarkable, if not annoying, aspect of probability theory that subjective probability is not amenable to Karl Popper's test of falsification.³³ Popper himself conceded that the hypothesis of the numerical probability of a single event is "impervious to strict falsification."³⁴ In other words, when the meteorologist on television forecasts a 70% chance of rain tomorrow, then tomorrow's appearance of sunny weather would *not* falsify her prediction.³⁵

Probability theory displays precisely the kind of intersubjectivity for frequentists and subjectivists that Carnap found was typical of specialized discourses. Probability theory may therefore be a possibly incoherent (yet mutually inextricable) combination of two discourses rather than a single coherent discourse. Carnap's valiant attempt to fill

³¹ A recent study, however, attempts to do what Carnap eschewed, See Colin Howson & Peter Urbach, *Scientific Reasoning: The Bayesian Approach* (1993).

³² The classic study is Leonard J. Savage, *The Foundations of Statistics* (1954).

³³ Long-run probability, however, is generally accepted as being amenable to falsification. I would not be so sure, but I am no expert in probability. For what it's worth, I would regard frequentist probability as not being outright falsifiable but rather as being amenable to highly probabilistic falsification.

³⁴ Karl Popper, *The Logic of Scientific Discovery* 133 (1959).

³⁵ The entire universe, down to quantum entities, seems probabilistic. Thus probability theory must be a discourse. Einstein famously disputed this, saying "God does not play dice with the universe." Niels Bohr not so famously rejoined, "Dr. Einstein, please don't tell God what He can do."

the “A” box in the above matrix ended in failure in a clear case where one’s first impression would have predicted the contrary.

C. TESTING FOR RATIONAL EXPORTABILITY

Inasmuch as the “A” strategy did not pan out for Carnap, the question arises whether a “B” discourse could be found that would prove his hypothesis. One possibility for “B” is economic discourse as conceptualized by Judge Posner:

Economic theory is a system of deductive logic. When correctly applied, it yields results that are consistent with one another. Insofar as the law has an implicit economic structure, it must be rational; it must treat like cases alike.³⁶

This is a strong claim for the extension of economic logic to law. But how do we get from a deductive system to deciding real-world cases? Posner’s answer is that economics requires judges to decide cases in such a way as to maximize social welfare.³⁷ In this fashion Posner is adopting a claim that is frequently made or implied by experts in many discourses: that the internal *methods* within their discourse take on *normative* power when extended outside the discourse. Posner apparently wants a court to aggregate the utilities of everyone in society and then calculate whether a decision for plaintiff or defendant would play out in such a way as to maximize social benefits.³⁸ However, there is another central tenet of economics which Posner accepts in other places in his writings

³⁶ Richard A. Posner, *Economic Analysis of Law* 242 (3d ed. 1986). Posner by inference recognizes the need to use an empirical concept like social welfare to get from a deductive system to an inductive system, though he does not put it in those terms.

³⁷ Richard A. Posner, *The Problematics of Moral and Legal Theory* 208 (1999) (“Judges have got to understand that the only sound basis for a legal rule is its social advantage”). This is Judge Posner talking, not Lenin or Stalin.

³⁸ The decision cannot be Pareto-optimal because one party (the loser) is made worse off.

to the effect that the interpersonal comparison of utilities is impossible. But then, if it is impossible for a judge to aggregate and compare the utilities of the two litigants standing before him, how is he supposed to aggregate and compare the utilities of hundreds of millions of persons outside the courtroom?³⁹ An irrational “leap of faith” would seem to be required. Although Posner attempts to soften his argument by prefacing his third sentence by “Insofar as,” that qualification is a harmless tautology because law can be rational even if its structure is not economic.

Is there a discourse whose internal logic appears consistent to all observers? (Lewis Carroll’s *Jabberwocky* might be consistent, for all anyone knows, but it certainly does not *appear* to be consistent.) The test of appearing consistent is itself rather formidable. Yet for our purposes, a discourse that satisfied that test would seem clear and transparent. With such an apparently consistent discourse, we could then go on to test whether it is rationally exportable.

Fortunately there is such an apparently consistent discourse that is also clear and transparent: quantum logic. As developed by John von Neumann in 1932, with the subsequent assistance of George Birkhoff, quantum logic (“QL”) seems to describe in logical symbols the weird but consistent observations of experimental results in quantum mechanics.⁴⁰ Accordingly, we begin with a simplified version of von Neumann’s QL. Take a very small space ‘s’ that contains a quantum entity such as an electron or

³⁹ For an expansion of this point, see Anthony D’Amato, *Why Be Fair When You Can Have Welfare?*, Working Paper 23, BePress, Public Law and Legal Theory Papers, <http://law.bepress.com/nwwps/plltp/art23>; also at Social Science Research Network, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=428660.

⁴⁰ See John von Neumann, *Mathematical Foundations of Quantum Mechanics* (1932).

photon.⁴¹ Under Heisenberg's uncertainty principle, the quantum entity in the space either has position '**p**' or momentum (speed) '**m**' (we cannot know which). In symbols:

s = very small space

p = position of an electron in space **s**

m = momentum of an electron in space **s**

v = the disjunct "or"

^ = the conjunct "and"

¬ = the negation "not"

() = round brackets

We then assert the following principle which in fact is descriptive of all experimental results without exception in quantum mechanics:

- (1) **s (p v m)** = the small space **s** contains within it a measurable position of the electron or a measurable momentum of the electron.⁴²

Under ordinary logic the external quantifier '**s**' can be distributed through the parentheses so that

- (2) Ordinary logic: **s (p v m) = sp v sm**

⁴¹ More accurately, logical propositions concerning quantum entities are equivalent if and only if they map onto the same subspace of a Hilbert space.

⁴² Normally one would add "or both" to the disjunct. I do not indicate here whether the disjunct is inclusive or exclusive, though Heisenberg's principle seems to say it is exclusive.

But von Neumann's quantum logic *prohibits* the distribution of 's' through the parentheses.⁴³ Hence

$$(3) \text{ QL: } s(p \vee m) = \neg(sp \vee sm) = \neg sp \wedge \neg sm$$

Thousands of quantum mechanical experiments have confirmed, and none has ever disconfirmed, the impossibility of measuring both the position and the momentum of a single quantum entity such as an electron. When an electron is measured for its position, then its momentum becomes (or has always been) indeterminate.⁴⁴ Similarly, when an electron is measured for momentum, its position becomes (or has always been) indeterminate. Although we know (or think we know) that a given electron has both a position and a momentum (how else could we even *imagine* an electron?) only one of them can ever be measured. Hence if 's' were to be distributed through the parentheses, there would be a clear violation of Heisenberg's uncertainty principle. For it would be tantamount to saying that in two small spaces each may be found to contain an electron with a single determinant measurement.⁴⁵ Since this conclusion violates experimental results, it follows that QL has to be modified: it must contain a proposition that prohibits

⁴³ My focus on bracketability in the text is a simplification of von Neumann's modified quantum logic. He did not put the issues the way I have here, but I am confident that my simplified approach does not change any of the substance of von Neumann's demonstration.

⁴⁴ The word "becomes" in the text is problematic. In the quantum world, strange as it seems, if position is measured, then momentum *is and always was* indeterminate.

⁴⁵ If formula (2) were true of quantum mechanics, it would indicate the possibility of separately measuring the momentum and position of an electron (technically, this would be done by using paired electrons and calculating not their momentum nor position but their spin-up for zero degrees of emission or spin-down for 45 degrees). The experiments involving the splitting of paired electrons and attempting to measure them separately, conducted by Alain Aspect and his colleagues in 1980, proved decisively that the Heisenberg uncertainty was an unalterable fact of nature (and not a contamination of the observed by the observer, as it is sometimes popularly depicted).. See Alain Aspect, Jean Dalibard, & Gerard Roger, *Experimental test of Bell's inequalities using time-varying analyzers*, 49 Physical Review Letters 1804 (1982); Bernard d'Espagnat, *In Search of Reality* 39-43 (1983).

distribution through the parenthesis. But can ordinary logic (which we know is consistent) accept a QL modification without becoming inconsistent?

Let us step back a moment and look at von Neumann's problem. He has invented a quantum logic (QL) that describes the results of quantum experiments. He realizes that QL is not the same as ordinary logic. He wants to know whether QL is itself consistent. In abstract terms we can depict von Neumann's problem as follows:

(4) $QL \pm X = \text{ordinary logic} = \text{something (which we call X)}$ must either be added to QL or subtracted from QL in order to make it consistent with ordinary logic.

If von Neumann *added* X to QL, then he would never know whether X itself was exactly the thing that made formula (3) work out. For example, suppose we stipulate that X stands for square brackets through which external modifiers cannot be distributed:

$$(2A) \text{ QL: } s [p \vee m] = s [p \vee m]$$

Formula 2(A) is of course a tautology; it is the same on both sides of the equal sign. But this is not to say that it has no informational value. Formula 2(A) tells us that when square brackets are used, the external modifier 's' may not be distributed through the brackets. Von Neumann's quantum logic is thereby "rescued," but at the cost of adding precisely the *ad hoc* symbol ("[]") that allows it to be rescued. (It is like rescuing someone by using a sky hook.)

If instead of adding something to the QL formula to ensure its consistency, suppose we subtract something from it. Subtraction would seem to leave ordinary logic in place. We would then only require the otiose proposition that a subset of ordinary logic must be consistent with ordinary logic itself.

Thus suppose that instead of adding square brackets to ordinary logic, von Neumann simply subtracted from ordinary logic the rule that allows distribution through parentheses. In other words, even with round parentheses, the usual function of round parentheses is taken away.⁴⁶ Thus:

(5) QL – distribution through parentheses = ?

Although it seems unlikely that removing the function of bracketed expressions from ordinary logic would render that logic inconsistent (inasmuch as brackets seem to serve only to shorten the length of formulas without changing their substance) it surely is conceivable that someday a mathematician might find an expression that requires brackets in order to perform a logical deduction. Von Neumann himself experimented with many formulas in order to see whether QL's restrictive definition of brackets would alter any other results within ordinary logic. He found no counterexamples. Then after his death, in 1960 the mathematician David Finkelstein succeeded in proving that von Neumann's QL was indeed internally consistent.⁴⁷

⁴⁶ This might be equivalent to subtracting linear algebra from mathematics. Linear algebra restricts multiplication by providing, in effect, that $A \times B \neq B \times A$. In its absence mathematics would surely retain its consistency.

⁴⁷ See David Finkelstein, *Matter, Space and Logic*, in R.S. Cohen & M.W. Wartofsky (eds), 5 Boston Studies in the Philosophy of Science 199 (1968). However, the comprehensiveness of quantum logic is still being debated. See Michael Redhead, *Logic, Quanta, and the Two-Slit Experiment*, in Peter Clark & Bob Hale (eds.), Reading Putnam 161 (1994), and Hilary Putnam, *Comments and Replies*, in *id.* at 242, 265.

The above result (the internal consistency of quantum logic) identifies QL as a “B” entry in our initial matrix. This puts QL on a higher footing than Marxism, probability theory, or even law, sociology, and economics. For external observers have not been able to prove the internal consistency of any of these latter-mentioned disciplines.⁴⁸ But QL at least has been shown by external observers to be consistent.

Thus we now have found at least one *prima facie* candidate for meaningful interdisciplinary communication. QL has passed the test of internal consistency; it now must pass the second test of rational exportability. If it does pass that test, my thesis in the present Article would be falsified. For there will be at least one discipline which holds out the hope of achieving new ideas when it is combined with some other discipline.⁴⁹ Such a finding would invalidate my contention that it is *prima facie* cost-ineffective to expect new ideas to emerge out of *any* pairing of *any* two disciplines.

I propose three basic tests for rational exportability: (1) congruence with the universe, (2) syntax, and (3) semantics. Although applying each of these to the arcane question of the exportability of quantum logic may seem like swatting a fly with a sledgehammer, my collateral purpose is to set forth some more general thoughts that can be adopted to any inquiry whether a given discipline is rationally exportable.

⁴⁸ I once suggested that by assigning Gödel numbers to all words, a Godelian proof could be constructed that language—and hence any language-based discipline such as law—contains unprovable propositions. See Anthony D’Amato, *Pragmatic Indeterminacy*, 85 Nw. L. Rev. 148, 172-73 (1990). But Professor Ken Kress more or less convinced me, after extended conversations, that it is the very restrictiveness of mathematics that allows for Gödel’s result. Outside of our dialogue, I am unaware of any theories that attempt to extend Gödel’s proof to human language. I anxiously await the issue coming up sooner or later in consciousness studies.

⁴⁹ What about ordinary logic itself as a consistent and rationally exportable discipline? As Gottlob Frege showed, logic is not a subset of rationality, rather logic constitutes rationality. For more discussion on this point in a short piece that I excluded from the present Article, see Anthony D’Amato, *A Quick Primer on Logic and Rationality*, Social Science Research Network, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=913016

1. Congruence with the Universe

Let's take any two disciplines; for example, Astrology and Buddhism. Then the following assertions could be made:

- (6) Astrology explains the universe.
- (7) Buddhism explains the universe.
- (8) The universe is consistent.
- (9) Therefore, Astrology and Buddhism are rationally co-exportable.

Of course, this argument does not mean that astrologists will want to collaborate with Buddhists or vice versa. But if (9) is true, then the two disciplines in principle could find it cost-effective to collaborate.

The rather formidable question of the consistency of the universe is thus implicated. In the seventeenth century, well before anyone dreamed of a quantum world, Spinoza wrote that “whatsoever is contrary to nature is also contrary to reason, and whatsoever is contrary to reason is absurd and, *ipso facto*, to be rejected.”⁵⁰ In modern terminology, we could recast Spinoza's argument as follows:

- (10) Nature (the real world) is consistent.
- (11) That which is consistent is reasonable.
- (12) Discourse X is contrary to nature.

⁵⁰ 1 R.M.H. Elves (ed.), Chief Works of Benedict de Spinoza 92 (1951).

(13) Therefore, discourse X is unreasonable and should be rejected.

The discourse that Spinoza was targeting was the discourse of miracles. Since miracles are by definition contrary to nature, he concluded that the discourse of miracles was unreasonable and should be rejected.

If we apply Spinoza's argument to QL, we get:

(14) QL accurately describes a domain of the real world (the quantum domain).

(15) Under Spinoza's assumption, the real world itself is consistent.

(16) Therefore if the real world is consistent, QL must also be consistent.

(17) Any discourse that accurately describes the real world is internally consistent.

(18) QL is rationally exportable to any discourse that accurately describes the real world.

This argument might seem to solve the problem of rational exportability and hence falsify the present thesis. By examining what is wrong with the argument, the concept of rational exportability can be further clarified.

The first thing wrong with Spinoza's argument is that it proves too much. Every discipline believes it accurately describes the real world. For example, many psychologists believe that the only reality is our mental projections onto whatever world if any might be out there. Many economists believe that "Economic Man" is at the center of the natural world. Judge Posner seems to believe that economics describes the world

of law—or at least all the law that’s worth describing. An extreme Marxist like Nicolai Berdyaev would argue that every material object in the real world is the product of internal molecular contradictions, and since dialectical materialism applies to every object in the world, dialectical materialism is therefore exportable bottom-up to all macro-spheres of discourse.⁵¹ There are many other propositions that are peculiar to various discourses. For example, many Skinnerians believe that there is no free will in the real world, many theologians believe in life after death, many legal realists say that judges make law rather than finding it, and some biologists invoke the panspermia thesis to explain the origin of life on earth (that the first bacteria came here in meteors from outer space). None of these specialists would ever be heard to say that their home discourse is inconsistent with the real world. It is more likely that they would try to latch on to the Spinozan argument to show that their own discipline, by virtue of its irrefutable consistency with the real world, has a rational claim upon external observers.

Second, in order for some disciplines like theology to be able to claim to describe the real world, the real world may need a bit of expansion. Thus if we include Heaven and Hell in the real world, as theologians might insist, then their discipline is more comprehensively descriptive than many other disciplines.⁵² But that expansion is not necessarily benign for present purposes, because Heaven or Hell may contain inconsistencies.

Third, a particular discipline might not be looking at the real world after all. It can be argued that quantum logic should not get the benefit of Spinoza’s argument

⁵¹ See, e.g., Nicolai Berdyaev, *The Meaning of History* (1923); Nicolai Berdyaev, *Spirit and Reality* (1937).

⁵² I simply cannot resist throwing in a cartoon imagined by Isaac Asimov. God, the quintessential interdisciplinarian we might say, has just finished six days’ hard labor in creating the Earth, filling it with water, air, mountains, valleys, flowering plants, animals and fish of all kinds. He rests and looks up at a Higher God. The Higher God says, “For *that* you want a Ph.D.?”

because the quantum microworld might not be part of the real world. This is an admittedly strange argument inasmuch as all the matter in the universe is made up of quantum entities. How can we say they are not “real”? Yet whether those entities are “real” may depend upon our definition of reality. Alastair Rae has contended that quantum mechanics is only an approximation of reality.⁵³ From our macro perspective—which is of course our only perspective—we do not know what sub-atomic entities are or how they work. We can only see their effects—their reflections, one might say—in our own world. Hence, as Rae claims, they may very well be illusory or “virtual” objects. (We’ve seen that if their position is specified, their momentum is uncertain—unlike any particles or solid things in our own experience.) To be sure, Rae’s theory is not generally accepted. But his analysis seems logically sound. The possibility that he may be right implicates the more general argument that the term “real world” may simply beg the question whether a given discipline’s correspondence with the real world is coherent.

Fourth, it could be argued that a discipline focuses only on part of the real world, and if the rest of the world were included, the discipline could be exposed as incoherent. Maybe the Lord of the Rings can perform miracles just because Middle Earth is only a part of the real world. Thus we might ask whether the quantum microworld is merely part of the real world. Physicists have recently argued that the real world consists at least of ten spacial dimensions.⁵⁴ Since we can only see three of them, perhaps the location-momentum test of quantum mechanics that eludes us is an artifact of our limited three-dimensional vision. In the “real” universe of N dimensions, momentum or spacial

⁵³ Alastair Rae, *Quantum Physics: Illusion or Reality?* (1986).

⁵⁴ See Brian Greene, *The Elegant Universe: Superstrings, Hidden Dimensions, and the Quest for the Ultimate Theory* (2000); Lisa Randall, *Warped Passages: Unraveling the Mystery of the Universe’s Hidden Dimensions* (2006).

distinctions for all we know may disappear.⁵⁵ Thus it could be argued that even if the three dimensions we inhabit are internally consistent, they may be embedded in other dimensions that contain inconsistencies. The entire set of dimensions, therefore, may have produced a real world that contains inconsistencies. Lest that seem unimaginable, it could be stated more moderately: the goings-on in a dimension higher than our own may be inconsistent from our point of view, given our non-access to a higher dimensional point of view that could regard the same goings-on as consistent.

For the above reasons, and similar ones that could be adduced, the Spinozan test of consistency with the universe may (from the standpoint of our present knowledge) safely be ruled out.

2. The Test of Syntax

The test of syntax is the more straight-forward of our two remaining tests. We simply have to check whether the symbols of the home discourse are isomorphically related to symbols in the target discourse. “Symbols” include words, numbers, pictographs, formulas, and so forth. “Isomorphic” means that a symbol of one discourse must map onto a symbol of the other discourse—not that the two symbols must be identical.⁵⁶

⁵⁵ You can get a picture of this by putting two dots at opposite corners on a sheet of paper. From a two-dimensional point of view, represented by the flat paper, these dots seem separated by a considerable distance. But we three-dimensional beings can fold the paper so that one dot is directly over the other dot. The two-dimensional being confined to the flat dimension of the paper would still see the same length of separation since it cannot look “upward,” but we three-dimensional beings can see that “in reality” the two dots are coincident. (It is possible that we see paired separated electrons the way a two-dimensional creature sees the two dots?)

⁵⁶ My French translation example, devised during a tedious French class, is “One man’s fish is another man’s poisson.” Obviously “fish” maps isomorphically onto the quite different-appearing word “poisson.”

Our previous formula gives us a simple example of syntactic correspondence:

$$(1) \quad \mathbf{s(p \vee m)}$$

Our task is to map the symbols in this formula to words in the English language. So let us say that ‘s’ is a space, such as a living room. We’ll let ‘p’ stand for Paul and ‘m’ stand for Mary. Then formula (1) says that either Paul or Mary is in the living room.

Now we quote formula (3) from quantum logic. Remember that QL is itself consistent; what we are now investigating is its rational exportability.

$$(3) \quad \text{QL: } \mathbf{s(p \vee m) = \neg(sp \vee sm) = \neg sp \wedge \neg sm}$$

This formula translated isomorphically into our everyday language states that although either Paul or Mary is in the living room, Paul is not in the living room and Mary is not in the living room.

What this last sentence *means* is a matter that will have to await our third test, that of semantics. But the sentence passes our syntax test. The sentence, taken word by word, maps directly from the home to the target discourse.

Here is a second quick example. Kate enrolls in Ohio State University only to discover that she is being charged a higher tuition than students who are residents of Ohio. Perusing the Constitution, she finds in the Fourteenth Amendment the words: “No state shall make or enforce any law which shall abridge the privileges or immunities of citizens

The idea of “mapping” includes grammatical equivalents. For example, translating one language into another usually runs up against problems of word order in sentences: does the adjective precede the noun, does the verb come at the end, and so forth? Obviously word order cannot be preserved in most translations, but expert translators can use grammatical equivalents to preserve syntax.

of the United States.” She asks a lawyer whether the Privileges or Immunities Clause renders the higher tuition unconstitutional. The lawyer responds that although Kate is not misreading the words of the Clause—syntactically, that is—the Clause does not apply to Kate’s situation because it has no actual meaning—that is, no semantic meaning. He will explain this to her later.

A final example is “dialectical materialism,” which we have encountered previously in Part IV. If Marxism is the home discourse and our own discourse is the target discourse, the phrase maps onto itself. We can use the phrase in our sentences parallel to the way that Marxists use it in their sentences. But although Marxist phrases among many other expressions seem to have the facility of being able to be mapped from one discourse to another, their meaning or register is another thing entirely. We have not yet tested whether isomorphic mapping retains the home discourse’s meaning.

So far we may conclude that in analyzing rational exportability, the test of syntax is a necessary first step. Without it, translation would appear to be impossible. But the syntax test is insufficient.

3. The Test of Semantics

We have seen that words and symbols can often be mapped isomorphically from one discourse to another, but is the meaning retained? Initially we have a philosophical problem: there is no standard reference and there is no neutral adjudicator who can determine whether the meaning of words is preserved across disciplines. A person may have something in mind by the sentence he utters that is radically different from what the

listener thinks.⁵⁷ A Buddhist priest walks up to a hot dog stand in New York City. The vendor says “What d’ya want?” and the priest replies, “Make me one with everything.” What are the odds that the vendor understands what the Buddhist means?

A more mundane variation of this story is Kate’s attempt to discover the meaning of the Privileges or Immunities Clause in the Constitution. When the lawyer tells her that the Clause has no meaning at all, he is referring to the fact that it was deleted from the Constitution by order of the Supreme Court in 1873.⁵⁸ Kate, the target discourse in this example, would have had no reason to know about this bit of legal jabberwocky inasmuch as the deletion took place outside the Constitutionally mandated public amendment process.

It would be tempting here to draw a distinction between a “deep meaning” that the home discourse is trying to convey, and a “superficial meaning” that the target discourse seems to be receiving. This distinction might appear to be useful in the preceding examples and perhaps even in the one we will now consider. However, as we shall see in the final example, the distinction collapses.

Suppose a law professor is interested in dialectical materialism as a possible way of analyzing the efficacy of international law in current international politics. He locates a Marxist expert as a potential collaborator. Before their meeting, he makes a good faith effort to understand the concept. He starts by reading Hegel in order to figure out the meaning Hegel assigned to the first word in the phrase, “dialectical.” He finds that Hegel

⁵⁷ Readers familiar with the philosophy of Wittgenstein and Quine will see that I am trying to state in capsule form their respective problems of private language and translation manuals. As much as I would like to present these arguments formally, it would take too much space to try doing so. See Ludwig Wittgenstein, *Philosophical Investigations* (Anscombe tr., 2001); John W. Cook, *Wittgenstein on Privacy*, in E.D. Klemke, *Essays on Wittgenstein* (1970); W.V.O. Quine, *Word and Object* (1960).

⁵⁸ *Slaughter-House Cases*, 83 U.S. 36 (1873).

departs from Aristotle's logical precept that all contradictions have no truth value. Instead, Hegel finds a tension between opposites that resolve themselves over the course of history. Opposites may be bilateral or trilateral, but they all involve idealizations.

Thus

Father v. Mother v. Child = Family

Law v. Force = Freedom

Freedom v. Property = Order

State v. State = March of God Through History

These terms do not seem to be precisely defined, but the law professor allows room for Hegel to play loosely with definitions inasmuch as precise definitions may in Hegel's case block at the outset what Hegel is trying to say. The professor is quite intrigued with Hegel's logic.

Now the professor substitutes materialism for Hegel's idealism in order to complete the idea of "dialectical materialism." He reads the works of Friedrich Engels and Nicolai Berdayev.⁵⁹ He learns that atoms are in a perpetual war with each other and that out of their tension arises solid matter. Aristotle's law of the excluded middle is rejected; the middle position (synthesis) gives rise to the material world that we see, hear and touch. Moreover, there is nothing other than the material world. In Marxism there are no Hegelian idealizations, no Platonic ideals, no gods. Engels and Berdayev accept Hegel's notion of progress through history, but it is not Hegel's March of God that they

⁵⁹ See Friedrich Engels, *Anti-Duhring* (1878); Friedrich Engels, *Dialectics of Nature* (1925).; see n.51, *supra*, for citations to Berdayev.

see; rather, they see the antithetical forces of labor and capitalism striving toward a future classless society.

The law professor then makes up a list of current events as they might be explained by dialectical materialism. The list includes oil diplomacy, the dollar as the world's default currency, nuclear proliferation, the Middle East conflict between Israel and Palestine, the leftist tendencies in Venezuela and Bolivia, the rightist tendencies in Southeast Asia and North Korea, the emergence of China and India as major global capitalist nations, genocide in the Sudan, and others. As to each item, he indicates his tentative view of how the event coheres with or emanates from, dialectical materialism.

But when he meets with the Marxist expert, she tells him that he is substantially off base. For example, she explains that oil production is not a capitalist tool, but rather a liquid asset of the working class in its struggle against capitalism. The professor gently responds that she may be taking this position because the Russian Federation has vast oil reserves. She takes offense at the suggestion, and says that he simply does not understand dialectical materialism the way it is understood by people who have worked with that concept all their lives. Its deep meaning is not distinct from its applications but rather is part of its applications, for even the definitions of words are material syntheses of the dialectics. To understand the true register of “dialectical materialism” is the work of a lifetime and is simply not available to lurkers.⁶⁰

Which is right: her deep meaning or the professor's alleged superficial meaning? Of course there is no answer because there is no neutral adjudicator (and who could establish his neutrality?). What the law professor is doing when he applies his

⁶⁰ She may add that *his* shibboleth—international law—is irrelevant because it is nothing other than the rhetoric of the stronger party.

understanding of “dialectical materialism” is wrong from her standpoint, and what she is doing when she applies it is wrong from his standpoint. The two would-be collaborators find themselves at the same impasse as Carnap did in the Vienna Circle debates. There is a semantical barrier between two opposing sides that could only be surmounted, if ever, by more sustained effort at mutual understanding than it is worth.

The question naturally arises: would it be different if the law professor who wants to investigate current events also holds a degree in Marxist studies? This would of course eliminate the last-mentioned barrier—of spending another lifetime to understand Marxism. But the elimination of this barrier does not get us very far. The lawyer-Marxist has to decide at the outset who his intended audience will be. If he writes his paper for a Marxist journal, then he can be fairly loose in extending the concept of dialectical materialism so that it covers and explains all current events. But if he intends to write for a law journal whose readership includes very few Marxists, he might have to be cautious in invoking dialectical materialism. (How could he argue convincingly to lawyers that oil is a liquid asset of the working classes?) Yet his very caution might narrow his paper down to just one or two current events, making it a non-starter. Furthermore, this clipped version of his essay might cost him some prestige in the Marxist community; he might there be perceived as a lukewarm Marxist. On the other hand, if he publishes in a Marxist journal, his law colleagues might read his paper and decide that he is a propagandist rather than a serious scholar. He may conclude that there is little to gain and much to lose by writing the paper. The upshot is that another of the millions of possible essays that could have been written by joint-degree holders does not

see the light of day.⁶¹ More importantly, what seemed at the outset to be an interesting approach to current world politics turned out to fall between two stools. The promise of interdisciplinary emergence once again has been honored in the breach.

My final example goes beyond the problematic distinction between deep and superficial meaning. It shows that even the plainest meaning of words can be entirely different in one discipline compared to another. This example will bring us down to bedrock. For if the very meaning of words depends upon the discipline that uses it, then rational exportability is as rare an event as Mendel's discovery of genetics.

We go back to quantum logic. Recall that Heisenberg's uncertainty principle showed that it is impossible to measure simultaneously the speed and position of a subatomic particle. This impossibility is not due to the coarseness of our measuring instruments,⁶² nor that quantum laws are indeterministic, but rather is just the way that subatomic particles are. Therefore it was possible for von Neumann to construct a logic that would demonstrate the internal consistency of quantum mechanics in light of Heisenberg's uncertainty principle. We have seen that quantum logic itself is consistent. Now we have to see whether it is rationally exportable to fields outside quantum mechanics.

⁶¹ Stanley Fish argues that "Being interdisciplinary is more than hard to do; it is impossible to do." Stanley Fish, *There's No Such Thing as Free Speech and It's a Good Thing Too* 237-38 (1994). He makes the following important point: "Does the practice of importing into one's practice the machinery of other practices operate to relax the constraints of one's practice? And the answer I would give is no, because the imported product will always have the form of its appropriation rather than the form it exhibits 'at home'; therefore at the very moment of its introduction, it will already be marked by the discourse it supposedly 'opens.'" *Id.* at 239.

⁶² See Alain Aspect, Jean Dalibard, & Gerard Roger, *Experimental test of Bell's inequalities using time-varying analyzers*, 49 *Physical Review Letters* 1804 (1982); Bernard d'Espagnat, *In Search of Reality* 39-43 (1983).

Recalling formula (3):

$$(3) \text{ QL: } s(p \vee m) = \neg(sp \vee sm) = \neg sp \wedge \neg sm$$

In our everyday language, the first two terms of formula (3) provide that although either Paul or Mary is in the living room, it is not true that either one alone is in the living room. The first and third terms of formula (3) provide that although either Paul or Mary is in the living room, Paul is not in the living room *and* Mary is not in the living room.⁶³ (The reader is invited to check verbally that these translations of the first two terms of (3) and the first and third terms of (3) are equivalent.)

What quantum language seems to be telling us is that the phrase “either Paul or Mary” refers to some strange unimaginable entity that consists of either Paul or Mary but neither of them taken individually—perhaps some kind of superposition of Paul and Mary. Suppose an eyewitness at a traffic accident reports to the police that the car that hit the pedestrian was either a Volvo or a Toyota. The police officer ask him, “Well, was it a Volvo?” and he replies “No.” The officer says, “It must have been a Toyota, wasn’t it?” and he replies, “No, I’m sure it wasn’t a Toyota.” “Then what did you see?” asks the officer who is growing more impatient by the minute. “I saw either a Volvo or a Toyota.” The eyewitness is in danger of being arrested for obstructing justice. He might later explain to the judge that he was, after all, just a professor of philosophy who was doing his best to see our experiential world through the prism of quantum logic. The

⁶³ Note: there is an ambiguity in the English language in the use of “either . . . or.” The phrase can mean “one or the other but not both,” or it can mean “one or the other or both of them.” But this is not the ambiguity that is discussed in the text. Indeed, the text does not contain an ambiguity at all; it simply gives a different *meaning* to the phrase “either . . . or.”

judge can be forgiven for retorting that her job is to adjudicate between persons and not protons.

D. IN CONCLUSION

If we return to the simple matrix at the beginning of this Part, we can now fill in all the squares:

	Internally Coherent	Rationally Exportable
probability theory	No	Yes
quantum logic	Yes	No

Of course this result does not mean that every imaginable discipline will have a disjunct between internal coherence and rational exportability. But it does mean that two of the most transparent and powerful cases for a positive combination of coherence and exportability have failed the test. We've seen that Carnap's investigations and subsequent work have shown (so far) that probability theory is divided into two parts that do not cohere with each other. We have also seen that Von Neumann's quantum logic was a syntactic success on the inside but a semantic failure on the outside—that is, when one attempts to export it to other disciplines.

The proof given in this Part V has been formalistic and *a priori*. Yet when combined with the minimal probabilities suggested in the previous Part III, it demonstrates the overwhelming unlikelihood that any new ideas or solutions to existing

problems will emerge from interdisciplinary collaboration. My conclusion is that it is radically cost-ineffective to designate in advance two disciplines (such as law and a social science) that will more likely result in a new idea or a solution to an important problem than simply picking a bright, creative person from one discipline (such as law) with the expectation that if such a person ever feels the need for someone to talk with, a wide range of potential collaborators is available at the home university or through the internet.

VI. OBJECTIONS

Following is a discussion of some objections that can be leveled against my claim of the prima facie untranslatability of meaning across disciplines.

A. HYBRID DISCIPLINES

When universities got started in the twelfth century, there were only four disciplines: theology, medicine, jurisprudence, and the arts. Since then, hasn't interdisciplinary collaboration successfully launched numerous hybrid disciplines such as political sociology, political anthropology, psychological anthropology, economic sociology, physiological psychology, ethnology, semiotics, archaeology, communications, and political economy?

The short answer is no. Hybrid disciplines do not have interdisciplinary origins; they nearly all began as splinter groups within a discipline.⁶⁴ If we take the four disciplines of the twelfth century, we see that even today there are very few hybrid disciplines that straddle any two of those four divisions.⁶⁵ We still talk of “the college of arts and sciences” without attempting to amalgamate them. The ancient discipline of medicine alone gave rise to many off-shoot disciplines such as chemistry, physics, biology, anthropology, sociology, and psychology.⁶⁶ There may be lawyers who specialize in legal medicine and forensics, but there has never been an actual discipline of law and medicine. There is no Medicinal Theology. There is a discourse called “canon law,” but it is practiced exclusively by priests; lawyers are not invited.

When several scholars in a discipline start chatting with each other about a related topic that is not covered by the standard courses in the field, we may be seeing a gleam in the eye of a new discipline. The birth process will depend on attracting students, obtaining university funding, and launching a journal. Many of these efforts fail, but a few succeed.⁶⁷ For example, Musical Botany might succeed as a splinter group in the Botany Department if it were started by a few botany professors who noticed that their plants seem to like classical music as much as they do. If and when it gets going, Musical Botany might attract professors from the Music Department. Eventually it might

⁶⁴ See, e.g., Tony Becher & Paul R. Trowler, *Academic Tribes and Territories* (2d ed. 2001).

⁶⁵ See, e.g., Ellen Messer-Davidow, David R. Shumway, & David J. Sylvan, eds., *Knowledges: Historical and Critical Studies in Disciplinarity* (1993).

⁶⁶ Fritz Machlup, *The Branches of Learning* (Knowledge: Its Creation, Distribution, and Economic Significance) (1982). The journal *Paedagogica Historica* contains numerous articles on disciplinary origins.

⁶⁷ See Steve Fuller, *Social Epistemology* (2d ed. 2002); Loren Graham & Wolf Lepenies (eds.), *Functions and Uses of Disciplinary Histories* (1983).

split off into a discipline of its own with an innovative journal featuring a pocket part with a classical CD and a warning: “Don’t try this on your weeds.”

The more comprehensive disciplines tend to survive despite the centrifugal forces of splinter groups within them because they usually have the largest professional organization and the single most prestigious journal in their field. Thus each potential hybrid discipline has to balance its wish for an independent existence against the reality that it may not receive funding from the university if it splits off from its umbrella discipline. Yet major splittisms have happened: in the past, chemistry split off from physics, and in the present statistics is considering splitting off from mathematics. But many more potential splits ended in failure. A century ago, history departments housed a civil war between narrative historians and philosophical historiographers. The former became so threatened by latter that they expelled them.⁶⁸ Then, deprived of a departmental linkage to “straight” history, the sad conclusion is that the historiographers wilted away.⁶⁹

B. UMBRELLA DISCIPLINES

It may be objected that the “disciplines” I have been talking about in this Article are in reality clusters of ill-fitting disciplines. I plead guilty.⁷⁰ As Donald Campbell pointed out,

Anthropology is a hodgepodge of skin color, physical stature, agricultural practices, weapons, religious beliefs, kinship systems, language, history,

⁶⁸ History today is generally regarded as the most intellectually weak discipline in the university.

⁶⁹ The fascinating tale is told in Oliver J. Daddow, *No Philosophy Please, We're Historians*, 9 *Rethinking History* 105 (2005).

⁷⁰ I've used the word “discourse” to refer to the narrower disciplines. See also n.3, *supra*.

archeology, and paleontology.

Sociology is a hodgepodge of studies of institutional data in which persons are anonymous—of individual persons in social settings, of aggregates of person data, both personal and institutional identity, and of interactions which are neither persons nor groups.

Psychology is a hodgepodge of sensitive subjective biography, of brain operations, of school achievement testing, of tactical analysis of Markov process mathematics, of schizophrenic families of laboratory experiments on group structure in which persons are autonomous, etc.⁷¹

The remarkable fact is that law faculties take these umbrella categories seriously. When they hire a person with a joint degree in law and sociology, they assume that now they have “covered” the field of sociology. Thus they look to a different umbrella field for the next candidate. Yet if they appreciated the degree of specialization of the person they hired, they would have to hire twenty or more expert sociologists to “cover” sociology. Repeat with each external discipline, throw in the self-perpetuation of interest groups, and someday there will be no one on the faculty who specializes in law.

C. ECONOMIC ANALYSIS OF LAW AS AN INTERDISCIPLINARY “SUCCESS STORY”

A major objection to the present thesis is the claim that the interdisciplinary collaboration known as the economic analysis of law has had a huge success in legal education. A closer look at the claim, however, shows that it is misleading if not false.

Judge Richard Posner, an acknowledged leader in the economic analysis of law, was not himself an economist. Instead he taught himself as much economics as would be

⁷¹ Campbell, *supra* n.19, at 331-32.

useful for adding economic theory to his ideas about law.⁷² His later collaborations with economists all appear to be division-of-labor collaborations.

His claims about economic analysis exemplify the skills we associate with economists: self-aggrandizement, self-promotion, marketing, advertising, and aggressive selling. Judge Posner would sell us on the proposition that economic analysis is doing no less than replacing the study of law:

There is an economics of accidents and accident law, of the family and family law, of property rights and property law, of finance and corporations, even of free speech and the first amendment, and so on through almost the whole law school curriculum. In several important fields-- antitrust, commercial law (including bankruptcy), corporations and securities regulation, regulated industries, and taxation--the economic perspective either is already dominant or will soon be, when the older professors and practitioners retire. In other important fields, such as torts, property law, environmental law, and labor law, the economic approach is making rapid strides. In still others, such as criminal law and family law, the traditionalists retain the upper hand--but for how long, who can say?⁷³

Judge Posner adjures law schools to import other areas of social science into their curriculum, his idea being that these other areas could replace as much law as economics has already dislodged.⁷⁴

Judge Posner's claim thus puts this Article directly on the defensive. Accordingly I will try to sketch a brief argument to the effect that the economic analysis of law has not resulted in original or emergent ideas for law study. Although there has been productive division of labor between law and economics, particularly in subject-matter areas that deal with economics (banking, antitrust), it is difficult today after forty years of economic analysis to identify a single original idea that has come out of interdisciplinary

⁷² In this respect his earlier work is similar to the uni-disciplinary scientists mentioned above in Part III: Einstein, Heisenberg, and Helmholtz.

⁷³ Richard A. Posner, *The Decline of Law as an Autonomous Discipline: 1962-1987*, 100 *Harv. L. Rev.* 761, 768 (1987).

⁷⁴ *Id.*

collaboration between law professors and economists. Hence I contend here (as I have in the past⁷⁵) that the overall report card on economic analysis should be marked with a gentlemanly C+. A great deal of economic analysis has distracted and wrong-footed the study of law by flooding it with superficially attractive yet malappropriate theory.

1. Contracts

Contracts would appear to be an excellent subject for economic analysis. Most litigated contracts deal with economic issues. Moreover, they usually do not involve messy factual disputes. Yet Eric Posner has recently concluded that after three decades of economic analysis of contract law “the economic approach does not explain the current system of contract law, nor does it provide a solid basis for criticizing and reforming contract law.”⁷⁶ He adds: “economic analysis has failed to produce an ‘economic theory’ of contract law, and does not seem likely to be able to do so.”⁷⁷

2. Coase’s Theorem

Coase’s theorem is to economic analysts of law as the First Amendment is to students of constitutional law. Announced in 1960, Ronald Coase demonstrated that in a free market where deadweight transaction costs are for the moment ignored, capital

⁷⁵ See Anthony D’Amato, *Post-Revolutionary Law and Economics: A Foreword to the Symposium*, 20 Hofstra L.R. 757 (1992).

⁷⁶ Eric A. Posner, *Economic Analysis of Contract Law After Three Decades: Success or Failure?* 112 Yale L.J. 829, 830 (2003).

⁷⁷ Id. at 829.

infrastructure and the means of production will be developed irrespective of who owns the entitlement.⁷⁸ While Coase's theorem is interesting to students of market behavior, it is hardly helpful to lawyers who are interested in the very question that Coase found irrelevant: "Who gets the entitlement?" Yet over 4,000 law-review articles have cited Coase's theory as providing some kind of insight into law.⁷⁹ What that insight might be, however, has not appeared to have been rationally transported from economists to lawyers.

3. Torts

Hand's negligence test is to economic analysis of law as the Due Process Clause is to constitutional law.⁸⁰ It is the leitmotif of Posner's casebook on Torts.⁸¹ In a lecture to students at Chicago Law School, he said of the Hand test: "its elaboration and application to specific doctrines in the law of torts have generated an immense and illuminating literature."⁸² However, a recent survey of pattern judicial instructions to juries failed to find a single instruction that was "even remotely analogous" to the Hand formula.⁸³ Law professors have not been persuaded by Posner's advocacy of the Hand test, perhaps for the following reason. Suppose a driver on his way to the airport decides

⁷⁸ Ronald Coase, *The Problem of Social Cost*, 3 *J. Law & Econ.* 1 (1960).

⁷⁹ A Westlaw search reveals 4,929 law-review articles; however, some of them make only marginal reference to Coase. Many of these articles may be characterized as intradisciplinary in the sense that they mainly consist of one economic analyst attacking another—often on the charge of misunderstanding Coase.

⁸⁰ Learned Hand formulated the test in *United States v. Carroll Towing Co.*, 159 F.2d 169, 173 (2d Cir. 1947). The formula is simply $B < PL$, where P = probability of injury, L = the injury, and B = burden of precautions.

⁸¹ Richard A. Posner, *Tort Law: Cases and Economic Analysis* (1982).

⁸² Richard A. Posner, *Values and Consequences: An Introduction to Economic Analysis of Law*, in Eric A. Posner (ed.), *Chicago Lectures in Law and Economics* 189, 192 (1999).

⁸³ Ronald J. Allen, *Two Aspects of Law and Theory*, *San Diego L.R.* 743, 749 (2000).

to avoid the heavy traffic on the expressway and instead takes a suburban route. Speeding recklessly through a school zone, he hits a child crossing the street. With these facts, let us take two variations, both applying the Hand test. In the first variation, the driver is a janitor at the airport who needs to get to work on time. In the second, the driver is CEO of a corporation facing a billion-dollar buy-out from another company. The CEO needs to catch a plane in order to attend and vote at the Mergers and Acquisition meeting. The Hand test, in Posner's words, tells us that negligence depends on whether "the loss caused by the accident, multiplied by the probability of the accident's occurring, exceeds the burden of the precautions that the defendant might have taken to avert it."⁸⁴ The first two clauses of this test of course apply to both drivers. Even the precaution is the same: both drivers had the alternative of proceeding at a safe 20 mph through the school zone. The difference between the two variants is in the burden of precaution. The first driver might have been fined by his employer for being late, yet the amount of the fine would be far less than the victim's loss discounted by its unlikelihood. But the second driver could have lost millions of dollars in the value of his stock and options, and hence his burden was far greater than the victim's loss. The result is that the first driver is negligent and must pay full damages, whereas the second rich driver is *not negligent at all* and need not pay anything (even though the judgment would hardly make a dent in his fortune). How would the law economists explain *that* distinction to the parents of the child run over by the rich man? Sleight-of-Hand?

⁸⁴ Richard A. Posner, *Economic Analysis of Law* 69 (1972)..

4. Criminal law

A similar distortion occurs in Posner's economic analysis of criminal law. Looking over all the theories of criminal law—deterrence, incarceration, rehabilitation, retribution, violation of social contract—Posner opted for the one that could be quantifiable: if the expected value of the crime is less than the probability of punishment times its duration, a person should have been deterred; hence he violated the law.⁸⁵ To test this result, consider the following hypothetical. A childless woman snatches an infant from a momentarily unattended baby carriage, takes it out of state, and raises the child. Assume she valued the child so much that she was willing to take the risk, if she had been caught by the police, of spending 20 years in prison. Again let us take two variants: a poor woman and a rich woman. Both women value the child equally: say, at \$500,000. Since deterrence failed in both cases and perhaps would have failed in any generic case meeting these criteria, one might say, following Posner, that no crime was committed. But Posner does not quite reach such a counterintuitive conclusion. He believes only in objective value, not subjective value. The poor woman's subjective value of the child may have been \$500,000, but that figure in her economic situation was unrealistic. It might as well have been \$500 million. Thus if she had to spend 20 years in prison, she would not thereby have sacrificed an income stream worth \$500,000 over that time period. The result is that she is criminally guilty of baby theft. By contrast, the rich woman was actually risking the loss of \$500,000 or more if she had to spend 20 years in prison. Thus she committed *no crime at all* in snatching the baby because she

⁸⁵ Was the law he violated his failure to apply the deterrence formula to himself?

was not deterrable as an objective matter.⁸⁶ Indeed, if we assume that an unattended baby is likely to have poor parents who cannot afford to hire maids and au pairs, even the baby is better off in Posner's tidy world: it goes from a poor family to a rich family.⁸⁷

5. Non-Falsifiable Theories

Economic analysts of law have a tendency to start with an economic theory and then fit it or apply it to case law. If the theory seems to explain the decision in a given case, then the author can claim that the theory has usefully illuminated the underlying reasoning in that case. On the other hand, if the theory does not fit the result, the author can claim that the theory as applied to the case has revealed an error in the judge's reasoning. When the latter occurs, the author can claim that 'sound economic reasoning' would have led to the correct result.⁸⁸

The process is a "heads-I-win-tails-you-lose" manipulation, even if unintended. It works in the legal discipline because of the peculiar nature of

⁸⁶ Judge Posner could truthfully reply to this paragraph, "I never said that, and I never would say that." Of course, my examples are hypotheticals. I am criticizing his argument by showing where it leads to as a matter of logic.

⁸⁷ In a telephone interview with *Salon* magazine, Posner said: "People have suggested that I'm advocating a system in which people buy babies to harvest their organs. But I just think that with a pricing system, we could make the process more efficient by allowing more first-quality children to be born." Carol Lloyd & Hank Pellissier, *Interracial adoption: One couple's story*, *Salon* 2 (Aug. 1997), www.salon.com/aug97/mothers/adoptions970804.html. Putting aside the question of what Posner's second sentence has to do with his first sentence, one might observe that it is perhaps typical of quantitative economic analysis that "first-quality children" in Judge Posner's phrase means children who are brought up in wealthy families (and hence are themselves intrinsically more valuable). But those economic analysts may be overlooking a more important qualitative factor: the longer "quality time" that many poorer families spend with their children compared to rich people (who hire maids, au pairs, and tutors while they go to the office). Even though the poor parents may be acting out of economic necessity, with whom is the child better off?

⁸⁸ For a parody of this procedure, see Anthony D'Amato, *As Gregor Samsa Awoke One Morning from Uneasy Dreams He Found Himself Transformed into an Economic Analyst of Law*, 83 *Nw. L. Rev.* 1012 (1989).

judicial decisions: they constitute the data of the law, but they are also subject to criticism that over time can vitiate their precedential value. “Scientific” data isn’t like that. Law as a discipline has a changeable data base of a kind that is wholly alien to the non-normative world of the social scientist. The lawyer not only reports the data, he interacts with its normative implications. “Empirical research” that the social scientists insist upon is not the stuff of the law because law’s database is and must be a combination of facts and values.⁸⁹ When a lawyer cites a judicial precedent to a judge, the judge will typically want to know not only what the decision was in the precedential case, but also whether the case was rightly decided. The twelfth century universities got it right: jurisprudence and science are as different as, well, the arts and theology. Thus economic theories seem invented by Plastic Man: they can be stretched to haul in and account for all judicial decisions whether correct or incorrect.

6. Selectivity

Judge Posner had to brush aside vast areas of torts and criminal law to arrive at his core quantifiable theories of Hand’s negligence test and the criminal-law deterrence test. On the torts side, his written works show a disdain for strict liability, product

⁸⁹ Lon Fuller described the complex issue of writing about the law in a professional journal perhaps as well as anyone ever has: “Everyone who has attempted to write on the law of the cases must have been concerned by the possibility that his readers might post this question to him: ‘Does this article state the law, or only your idea of what the law ought to be?’ Positivism demands that this question be answered, for obviously if it cannot then the basic distinction which positivism seeks to preserve is lost. Yet the writer may feel great embarrassment in answering it. To say that he is stating the law as it is will seem to involve either a species of fraud or a kind of omniscience which he has no intention of claiming. On the other hand, he does not like to say that he is only offering for consideration a series of personal reactions to the law, for he may well feel that he has, to a degree not precisely ascertainable, only made explicit those ideas which were already implicit in the cases.” Lon L. Fuller, *The Law In Quest of Itself* 138-39 (1940).

liability, and fraud, while on the criminal-law side he says virtually nothing about punishment, retribution, rehabilitation, or incarceration. It is as if Posner realized that economic theory does not fit these vast areas of law and concluded that it cannot be his theory that is incorrect but rather that the courts have been massively in error for many years. Yet, after serving for some years on the bench, Judge Posner gracefully acknowledged that the tort cases that have come his way have not seemed conducive to economic analysis.

7. Fraud and Misrepresentation

Fraud is a large gravitational sink in economic analysis, considering the recent prominence of fraud in the World.com and Enron cases. It is as if economists don't know what to do with fraud, especially given their inclination to applaud "sharp" business practices which they believe keeps markets tight and efficient.⁹⁰ A related myopia is the entire development of equity courts and trusts. Although economic analysts have written extensively on statutory mechanics of complex trusts, they seem to have little appreciation for the nature of fiduciary obligations and its history in the Chancery courts. They share with Posner an ex ante presumption of arms-length transparent bargaining that informs, and at the same time narrows, their analysis of contracts, torts, and crimes. There is no room in their world-view for fiduciaries. (How can a fiduciary fit their image

⁹⁰ Bernard Mandeville in the early eighteenth century argued that nations become wealthier if their business entrepreneurs engage in fraud: "private vices, public virtues". See Bernard Mandeville, *The Fable of the Bees* (1714). Adam Smith's masterpiece, *The Wealth of Nations* (1776) was largely a response to Mandeville.. Smith contended that the invisible hand could not guide the market if people engaged in fraud and deceit in their market transactions. The debate about fraud in the marketplace has not been resolved; with each year it seems to grow more complicated. The peculiar thing about fraud is that although it is as "economic" a subject as one could imagine, nevertheless economics seems to be the farthest-away discipline capable of saying anything at all useful about it.

of man as a rational profit-maximizer? Such a fiduciary would dip into the assets or sell them under the market and keep the difference.) Good-faith dealing is unquantifiable and hence must be swept under the rug labeled *caveat emptor*. Justice, as Oliver Wendell Holmes said, is a matter for the theology school across the campus.

8. Traditional Economic Areas

To be sure, there are areas of law, such as antitrust, banking, and insurance, that by their nature have always attracted economic analysis—well before the invasion of the economic analysts of law. These areas are ideal for division of labor between lawyer and economist. But as to the question of emergence, there is little evidence that economic analysis of law has changed these areas in any innovative way. Indeed, the focus on the quantitative aspects of antitrust—such as in Robert Bork’s reductionism of antitrust to the goal of delivering the lowest prices to the consumer⁹¹—has had a distorting effect on the field. The original impetus (not the only motive, of course) for antitrust legislation—combating an incipient fascist tendency of huge corporate combinations to overwhelm and run the government—seems to be an inconvenient memory for those who would like economic analysis to quantify everything in dollars. Further, even conceding that economic analysis has helped lawyers figure out many of the ways business entities do their end runs around the Sherman and Clayton Acts, experts in accounting might have helped even more.⁹²

⁹¹ See Robert H. Bork, *The Antitrust Paradox* (1993).

⁹² See n.141, *infra*

9. Fairness Versus Welfare

Perhaps the reason the leading economic analysts such as Judge Posner want other social sciences to take over the torch carried by the economists is their sense that economic analysis of law has peaked. Indeed the apex point may have been the year 2001 when the Harvard Law Review published the longest Article in the history of law journals: Louis Kaplow & Steven Shavell's *Fairness Versus Welfare*. Kaplow-Shavell contended in 427 pages that the policy of maximizing aggregate social welfare is superior to any other legislative or judicial policy that would be based on values such as justice, equity, fairness, morality, or good faith. For any policy based on these latter values would be Pareto-inferior to social welfare because it would leave at least one person worse off. The Kaplow-Shavell thesis seemed striking and immensely important when announced inasmuch as all the soft values of law that could be collected under the "fairness" rubric are now alleged to cause more overall harm than good, and hence should be banished from rational adversary argument. The impression made by Kaplow-Shavell with the help of the Harvard Law Review was that the economic analysis of law had finally reached dominance over all other legal reasoning.

However, a critical review soon appeared on the Internet. The review was widely downloaded and the authors never responded to it.⁹³ It pointed out that the word "unfairness" could be substituted for the word "fairness" whenever the latter appeared in the Kaplow-Shavell text without changing their logic in the slightest. "Bad faith" could be substituted for "good faith," "immorality" for "morality," and "injustice" for "justice." Thus all that Kaplow-Shavell had done was to define away all values, good or bad, that

⁹³ D'Amato, *Why Be Fair When You Can Have Welfare?* at n.38. *supra*.

would have challenged their stipulated definition of social welfare.⁹⁴ Their 427 pages could have been reduced to the shortest Comment in the history of law journals.⁹⁵

10. Jargon

There is no doubt that the economic analysis of law has bestowed upon the discipline of law some linguistic forms. There is Pareto optimality, although Vilfredo Pareto invented it a century ago. There is the Hand test, although Learned Hand invented it back in 1947. There are terms like free rider, ex post, and cheapest cost-avoider which are not new but have been given a fresh coat of paint. Some terms, however, are misleading, such as “efficient breach.” I discussed the distortions resulting from the economists’ use of this term elsewhere, so here, if I may, I incorporate that argument by reference⁹⁶ On the whole, it appears that the most enduring legacy bequeathed to law by the economic analysts is a jargon that is sometimes quite useful.⁹⁷ If sociology moves in right behind economics, lawyers may soon be arguing cases in terms of structural-functionalism, autopoiesis, action theory, personality subsystems, morphological analysis (replacing “due process of law”), and pattern variables. Personally I feel that the

⁹⁴ They also inadvertently proved that all courts should be abolished. For courts are, after all, in the business of making at least one party worse off.

⁹⁵ Perhaps the Kaplow-Shavell article had the salutary effect of changing the policy of the Harvard Law Review; now it will not publish articles longer than 75 law-review pages.

⁹⁶ See D’Amato, *Post-Revolutionary Law and Economics*, n.75 supra.

⁹⁷ It is possible that economics has turned over its best terminology to law and has run out of new ideas to offer. Cf. Ronald H. Coase, *Economics and Contiguous Disciplines*, 7 J. Leg. Studies 201 (1978). Coase predicts that once law professors “have acquired the simple, but valuable, truths which economics has to offer, and this is the natural competitive response, economists who try to work in [the law field] will have lost their main advantage and will face competitors who know more about the subject matter than they do.” Id. at 210.

increasingly casual use of terminology from economics and other social sciences—often just for their halo effect—tends to dull or divert the underlying reasoning.

D. IS LAW A REAL DISCIPLINE?

The invasion of the social sciences has generated among many law professors an identity crisis. Is law simply a matter of learning a specialized vocabulary? Does all the real thinking in the course of practicing law come from external disciplines such as social science, literature, or the hard sciences? Is the field of law like a field of raw land on which all persons can come in and plant crops, raise domestic animals, erect fences and build roads? In an influential essay advocating interdisciplinary appointments to law faculties, Dean David Van Zandt emphatically denies that law is an autonomous discipline with its own methods and approach. He claims instead that “law and legal institutions are merely a subset of social and political phenomena that are studied every day in economics, political science, and other departments.”⁹⁸ Judge Posner had earlier asserted that lawyers’ doctrinal tools “are of no great power—unless they are tools borrowed from another field.”⁹⁹

One important test of whether a field of study is a true discipline is whether it *fails* the semantics test of Part V. Thus, we take one or two central phrases or doctrines from an alleged discipline and see if outsiders can understand or translate them. If the outsiders fail to do so, then we may have a real discipline.¹⁰⁰ Is law such a discipline?¹⁰¹

⁹⁸ David E. Van Zandt, *Discipline-Based Faculty*, 53 J. Legal Ed. 332, 334 (2003).

⁹⁹ Richard A. Posner, *Overcoming Law* 91 (1995).

¹⁰⁰ Of course this test alone does not make it a *useful* discipline, e.g., Lewis Carroll’s Jabberwocky discourse also passes this test.

Consider the following two legal phrases, each in plain English: “promissory estoppel” and “constructive trust.” Can any person in the world who has not studied law understand, translate, or use these phrases or the ideas conveyed by them? These and hundreds of terms like them have a register that is unique to law. They were once woven into a linguistic tapestry that, when deconstructed, reveals the adversarial arguments that produced them. They encapsulate antitheses. They locate themselves among neighboring terms. They have an orientation in the tapestry. Law is not intentionally jargonized; its specialized language simply bears a heavy registry of meaning and understanding that is only open to the non-lawyer if she becomes a lawyer.

Law does not exist as a physical reality in the world. Law is nothing but communication. Yet it can move governments and channel their coercive instrumentalities. However, it is also a language that can entrap and mislead the average citizen. Lawyering is a profession because the public needs professional help in order to cope with a pervasive dictatorship of law.¹⁰¹ It is a quintessential discipline.

Yet law is not the only discipline worried about its own validity. Nearly every genuine academic discipline today is having at least a partial identity crisis. This can be evidenced by the fact that academic disciplines no longer reject out of hand the peripheral attacks that bombard their doctrine; rather they assimilate those attacks into the doctrine. Some incoherence may result, but the discipline always seems to come out stronger in the end. No less is true of law. Multidisciplinary forces have been sniping at law all along

¹⁰¹ Another simple test for law as a distinct discipline is to ask whether it is a science or an art. It is of course neither of them but rather, perhaps, some combination of both. (This is rather similar to the question of quantum mechanics discussed above in Part V, of either Paul or Mary being in the living room.)

¹⁰² Years ago I wrote: “The United States today is a dictatorship of law. Law affects our lives profoundly: it channels our behavior, it gives us incentives, it provides for our punishment if we violate its prescribed norms.” Anthony D’Amato, *Jurisprudence: A Descriptive and Normative Analysis of Law* 1 (1984).

its disciplinary boundaries, but law has a good record of taking in and absorbing external ideas. Just as trials are making increasing use of scientific expert testimony,¹⁰³ so too law journals are publishing useful division-of-labor contributions from outside disciplines that in many cases enrich the law, especially the applications of law. It is surely remarkable that any dispute involving monetary damages on any subject in the universe can be translated into a trial where the fact-finder listens to the expert testimony produced by the two sides and reaches a decision that the government will enforce. No controversy is ever dismissed on the ground that it is too difficult to resolve.¹⁰⁴ What other discipline can make that claim?

Yet the identity crisis has not gone away. Professors who have devoted their lives to studying law may feel that they have been ambushed. They are not being attacked for incompetence, they are being attacked for irrelevance. Law, of all things, seems to be losing its legitimacy.

I think this siege mentality is to a considerable extent justified because it is self-inflicted. The fault is not that we are trapped in discipline that is too narrow or insular, but rather that we have failed to take our discipline seriously. Instead of plumbing the depths of the law, we skate double-axels over its surface. The term “doctrinal analysis” in academic circles has almost become politically incorrect. Yet law is *about* the assimilation into doctrine of disputes, cases, and controversies. Law is *about* the forms of language that facilitate the exchange of ideas between lawyers and judges.

¹⁰³ The adversary system forces experts to communicate to triers of fact. The American judge gives far less weight to experts than do civil-law judges, but I think we are better off in being skeptical about experts. Let them present their opinions in plain English and justify them under cross-examination in plain English. It is open to the opposing side in the American system to bring in their own experts.

¹⁰⁴ Difficulty of judicial resolution may suggest to some observers that the issue in the case might be a “political question.” This is how gerrymandering appeared to Justice Frankfurter, who called it a “political thicket.” in *Colgrove v. Green*. 328 U.S. 549 (1946); see Frankfurter’s impassioned dissent in *Baker v. Carr*, 369 U.S. 186 (1962), predicting that the Court’s decision would destroy the world of law.

Law is inculcated in law students, some of whom become all the judges in the land. The fact that future lawyers and judges go through the same process of indoctrination ensures that they will emerge speaking a common language. Yet the disciplinary language of law is unlike any other language on earth. For it is language based upon a forced admixture of empirical and normative elements. If given a Chomskyan parsing, legal language could turn out to be more difficult than Navajo.

When a lawyer takes an ordinary fact of our daily life and inserts it into the linguistic field of law, it is transformed into a law-fact. Consider a court's "statement of facts" provided at the outset of every judicial opinion. A layperson can read this as just what it is labeled to be: a statement of the facts in the case. But lawyers and judges will read it differently. They will read every word as implicative of a set of legal norms that bear upon the case's outcome. Every fact calls to mind a norm; otherwise it would not be mentioned in the "statement of facts." And well before the judge wrote that statement, the facts were highly contested either at a trial or in successive motions, memos, and briefs. No word is "neutral" in legal argumentation; rather, every word tilts toward some norm, some legal theory, some pre-justification of the court's final judgment. The world, to a lawyer, is not an assembly of facts; it is an interpretive construct of those facts. Law-facts, and not facts *per se*, are the movable pieces in the litigative game. Sociological and scientific facts are existentially simple compared to law-facts.

Thus when the sociologist in the opening *Scenario* of this Article says that a lawyer's argument will be more effective if he has truth on his side, there are at least two conceptual leaps that are being overlooked. First, the sociological findings have to be

translated into the law-fact language of the law.¹⁰⁵ Unless this is done—and it may be done erroneously—the sociological findings are simply external to the legal proceedings. Law as a distinct discipline can only be accessed by persons speaking its language. Those persons—lawyers and judges—are a state-sanctioned monopoly, so outsiders have no choice but to go to them if they have legal problems. Second, opposing counsel can challenge the truth of the expert’s testimony by bringing in an expert who has a contrary opinion. This is not to say that truth is relative; the legal process simply incorporates the Aristotelian notion that truth is an aspiration. The judge and jury must aspire to attain the truth of the case, for there is only one truth even if it is contested by opposing sides. Experts can help the law’s search for the truth, but they cannot determine it.

In brief, the data of law is conceptually different from the data of the social or natural sciences. I find it hard to conceive how law students would become better legal advocates by learning how to quantify empirical data. Their job is learning how to deal with fact-value data, and doing that is tricky, elusive, and complex enough for one lifetime.

Law is a discipline that is sufficiently intra-linked having a register that is sufficiently remote from everyday parlance that there is hardly time enough in three years to impart to students an expert’s appreciation of the fundamentals of the discipline. Thus it is remarkable that law schools are willing to import other disciplines into the curriculum that would crowd out class hours that should be devoted to giving law

¹⁰⁵ The translation process includes the syntactical and semantical issues discussed in Part V of this Article, even if there is exact isomorphic transference. For the lawyer has to justify the inclusion of the sociological facts into her argument and be prepared to show that she has selected the legally relevant portions of the sociological findings. Thus even a literal translation of an expert’s testimony implies an assertion by the party who has hired the expert that the testimony is relevant to the legal determination of the case as well as fairly representative of the expert’s knowledge.

students their comparative advantage in the world—namely, an ability to use the law-fact language of the legal system to convince state officials to act in ways that will benefit their future clients. To be sure, there is always some advantage if a lawyer has some training in empirical methods and techniques.¹⁰⁶ But it is not a comparative advantage, for whenever empirical or statistical analysis is needed in a lawsuit or negotiation, lawyers will be at a disadvantage compared to social scientists who have the expertise to handle this work better, more efficiently, and with more up-to-date tools, than lawyers.

E. NEW LAMPS (PERSPECTIVES) FOR OLD

The recently announced Harvard Law Curriculum refers to “the perspectives provided by other disciplines” as one of the reasons for broadening the students’ law experience.¹⁰⁷ We would not expect Harvard to mention the fact that incoming law students have just had their heads crammed with four solid years of perspectives.¹⁰⁸

Apart from the matter of giving students less law for their law-school tuition is the assumption that the joint-degreed professor will be *able* to provide the desired perspective for the next fifty or so years of his tenure at the law school. What is being overlooked is that an expert is only an expert-in-context. An X-ologist is an expert in X-ology so long as he works daily in a department with his disciplinary peers. But once he

¹⁰⁶ A practicing lawyer might also have an advantage if he can speak several languages. Or if he is an affable companion in a friendly game of golf with his corporate clients. Or if he marries the C.E.O.’s daughter. (What if he marries the C.E.O.’s son?) But these do not rise to the level of comparative advantages that can be taught in law schools. (Or maybe I am speaking too soon.)

¹⁰⁷ See http://www.law.harvard.edu/news/2006/10/06_curriculum.php

¹⁰⁸ The new Harvard Law curriculum is innovative in many important ways. My criticism is aimed only at its interdisciplinary bias and associated opportunity costs.

is taken out of that department and placed, let us say, in a law school, then his expertise will begin to atrophy.

For it is the context that keeps the expert abreast of his field. The most important contextual determinant is physical: the discipline is located in a particular physical space on campus. Instead of Fitschwitscher Hall, people refer to “the building occupied by the English department.”¹⁰⁹ For very small departments they might say “you can find the Nanotechnology department on the middle shelf in the closet at the end of the corridor.” Once ensconced in their own space, members of a discipline will spend most of the hours of their professional lives interacting with each other and with the acolytes waiting upon them. They engage in shop talk when they see each other at lunch, in the halls, in the faculty lounge. in car pools going to and from work, or in the bleachers at Little League games; they serve on committees together; they read and evaluate articles and manuscripts submitted by candidates for departmental positions; they supervise or comment upon dissertations-in-progress by their own graduate students; they serve on acolytes’ oral exams; they read and comment on each other’s preprints and reprints; they write book reviews of important works in their field; they attend professional conferences which apprise them of the latest disciplinary research. And when they are alone in their offices, or at home, they read the leading journals in their field. As Donald Campbell has pointed out, their motivation for reading these journals is simply that their colleagues read them: “One is rewarded socially for shared detailed reading of exciting new developments.”¹¹⁰ An expert without these informal support systems is an expert manqué.

¹⁰⁹ Tony Becher, *supra* n.16, at 24 (quoting B.R. Clark).

¹¹⁰ Campbell, n.19 *supra*, at 336.

Let us return to the X-ologist who decides to spend his career on a law faculty.¹¹¹ As far as his X-ology training is concerned, he is now a fish out of water.¹¹² He will not keep up with the X-ology journals because his new law colleagues do not read them and are uninterested in the latest news in X-ology. As Campbell emphasizes, “no reward occurs for unshared reading.”¹¹³ So he will start reading *law* journals and keep up with exciting developments in judicial decisions and legislation. He will soon drop out of X-ology conferences, participate only rarely in Ph.D. oral exams, and lose touch with what the X-ologists might be doing or thinking about on the other side of campus. There are no “Continuing X-ology Education” courses for him to take that could be the equivalent of lawyers’ “Continuing Legal Education” courses. After five years or so, his X-ology training has become out of date. New people will be added to the X-ology department who do not know him. He may come to regret his choice of joining the law faculty, even though he was paid a higher salary, because the true intellectual love of his life was X-ology. He may become a disconsolate fish.

Yet his law colleagues will not know that his X-ology expertise has withered away. He will remain the reigning law-school expert on X-ology. For the next 45 years or so of his career, he might possibly be a source of misinformation for the rest of the law faculty.¹¹⁴

¹¹¹ She might be motivated by the higher salary that law schools typically pay compared to graduate schools, or perhaps because it was too difficult getting into a good X-ology department.

¹¹² Law schools have long recognized the reverse of the fish-out-of-water phenomenon. They used to hire on occasion very successful practitioners who had graduated from law school some 20 or 30 years before, and put them directly on the faculty as full professors. Yet brilliant though some of these people were, they hardly ever contributed anything of cutting-edge value to legal scholarship.

¹¹³ Campbell, *supra* n.19, at 336.

¹¹⁴ I have not done any surveys or interviews on this point. Here are two anecdotes that may resonate with readers’ experiences. In the mid-70s when my colleagues and I wanted to hire an economist who could work in the newly exploding field of economic analysis of law, an old-timer economist on our faculty successfully derailed the process for a couple of years by pronouncing that “the stuff coming out of the

Is there a possible remedy in giving the X-ologist a half-time job at the law school and a half-time job in the X-ology Department? Alas, a discipline, like Bible-belt baptism, requires total immersion.¹¹⁵ A person who works half-time in two disciplines will end up appearing to his colleagues as having short-changed both departments. And to a large extent they will be right even if it is not his fault.¹¹⁶

Of course, if our X-ologist decides to spend most of his time in the X-ology department, he may then be able to keep up with his field but he will not have much more presence on the law faculty than the typical adjunct professor. Or if he opts to spend most of his time at the law school, then he will be operating out of context, as the above argument has attempted to show. He cannot simultaneously consume two free lunches.

VII. OPPORTUNITY COSTS

My thesis can be criticized at this point by saying that even if I have proven that interdisciplinary collaboration is not cost effective, nevertheless if costs are *de minimis* then law schools can jump aboard the Interdisciplinary Express without paying for the

University of Chicago is a lot of hogwash.” In 1980 when I was working on an article about risk aversion in the context of settlement of lawsuits, I asked an economist colleague about the prospect theory I had read about in Amos Tversky & Daniel Kahneman, *The Framing of Decisions and the Psychology of Choice*, 211 *Science* 4538 (1981). My colleague replied that he had looked into their theories carefully and decided that they were “a lot of bunk.” For a good discussion of prospect theory, see Peter Bernstein, *Against the Gods: The Remarkable Story of Risk* (1996).

¹¹⁵ I can just hear the late Abe Chayes as he told this story: “Reverend, do you believe in baptism by total immersion?” “Believe in it? Hell, I’ve seen it *done!*”

¹¹⁶ Again I have no surveys or interviews to back up this assertion, but I do have some personal experience. I came to Northwestern University with a half-time appointment in Political Science and a half-time appointment at the School of Law. For my first three years my conservative law colleagues would say things like “you wouldn’t be asking this question if you had come to the last faculty meeting,” and my liberal polysci colleagues would say “why do you only come to some of our lunches and workshops?” I decided that I was falling between two horses, and so I decided to ride full-time the horse on the right.

ticket. But in fact there are severe opportunity costs. They cannot be quantified and they cannot be given too high a value.

A. WHAT LAWYERS DO NOT KNOW

The stuff that newly appointed assistant professors of law do not know about their discipline can fairly be inferred from the contemporary law-school curriculum. Generally speaking, what they don't know is where the words and phrases they use came from—the historical evolution of the meanings embedded in legal language. Words are the tools—indeed, the only tools—of our profession. The words we use were forged in the crucible of English legal practice from roughly the eleventh century to the eighteenth. During that time the adversary system of conflict resolution was created and painstakingly developed under harsh conditions of public suspicion of judges and courts. Judges did not have the unqualified support of the government; if they issued unjust or corrupt decisions they ran the risk of overthrow by an angry mob with the sheriff looking the other way. How many young law professors know that if a losing party wanted to appeal a trial judge's decision, he had to sue the judge for theft of his legal rights?¹¹⁷ How many law teachers understand the origins of the jury system and the evolving bifurcation of facts and law (which remains an issue today in the phrase “a mixed question of fact and law”)? How many know that the early jurors asked questions of the parties and their attorneys, and were accustomed to going around the neighborhood interviewing citizens and poking into evidence? How many are aware of the self-protective reaction of the judges in turning to

¹¹⁷ For a current opportunity cost, consider how many lawyers today would connect this musty bit of jurisprudential lore to the controversy regarding criminal prosecution for fraud against Congresspersons who fail to provide “honest services”? Cf. *United States v. Rybicki*, 287 F.3d 257 (2d Cir. 2002).

formalism? Judges hoped that a strictly logical set of pleadings from the parties would narrow the case down to one legal issue for the judge to decide. Judges were especially concerned with the internal logic of the law, so as not to open an illogical and arbitrary door that would let in a flood of litigation from which would emerge publicly inexplicable results.¹¹⁸ In addition, judges protected themselves by confining disputes to traditional forms of action. How many law teachers know *how* the forms of action were hammered and forged into different uses by clever lawyers while retaining their original purpose? How many of today's lawyers are aware of the origin and sublime intricacies of the action on the case? Their ignorance is not their fault; it is the fault of what the law schools have failed to teach them.¹¹⁹

How many lawyers and law professors know that the tendency of the law judges to shrink into their black-robe carapaces eventually reached the breaking point where citizens came to realize that the law courts were not delivering justice? Most lawyers are vaguely familiar with the remedy: the institution of Courts of Chancery whose first self-assigned task was to get rid of formalism. But this development had the unintended consequence of increasing the intellectual complexities facing lawyers: the common-law courts engaged in a spirited battle against the equity courts as a result of lawyers' forum-shopping until each set of courts developed its own protective jurisdictional skin.¹²⁰

¹¹⁸ Professor Fuller was fond of quoting Lord Mansfield's idea that the "law works itself pure." This is more than an aphorism. It is a deep insight into the internal logic of the law that protects itself by cutting off any incipient foray into incoherence. Sometimes incoherence creeps in anyway, and then the law must overturn or distinguish away the offending precedents.

¹¹⁹ There is an alternative that requires little thought: take it up with the legislature and bring along a social scientist. We thus complexify the common law by erecting a confusing grid of legislative overpasses. For one of the best books ever written defending the common-law approach, see Richard A. Epstein, *Simple Rules for a Complex World* (1995).

¹²⁰ The legal battles have spilled over into culture. For example, how many lawyers today appreciate the powerful subtext of Shakespeare's *The Merchant of Venice* as a clash between the common-law insistence

Most law professors today are aware that the early common-law courts construed statutes narrowly on the stated ground that statutes derogated from the common law. But this was not just a turf battle between Parliament and the courts as it is often portrayed to be. Rather, it grew out of a conviction that the common law was logically coherent and should be preserved against external arbitrariness. Since Parliament wrote on a clean slate, it could enact statutes that added false or illogical propositions to the carefully-constructed latticework of the common law. Judges thought their own security could be threatened by having to decide cases unreasonably because of arbitrary statutes. This historic tension between the coherence of common law and the potential arbitrariness of legislation can be found today underlying every case in which a statute is interpreted, if a lawyer knows how to look for it.¹²¹

Today's courts mingle law and equity. They have modernized pleadings to the point where they bear little relevance to the subsequent trial. But although the pleading process is less formal, the rules of civil procedure have become increasingly formal in a possibly futile attempt to make up for the modernization of the pleadings. Pleadings today reproduce the vices but not the virtues of pleadings five centuries ago. Yet in high-stakes cases, even the pleadings and the rules of procedure behind them may have to be unraveled and dissected by those lawyers who understand the hard-fought stages of their evolution and what tensions lie buried in the language that so glibly rolls off the tongue. Even more importantly, the old pleadings were far more adversarial than they are today,

upon adherence to the letter of a contract (Shylock) and the equity courts' openness to modifying a contract if necessitated by principles of justice (Portia)?

¹²¹ In Europe, civil lawyers are more apt to focus on logical tensions between a given statute that is being interpreted and the structure of the statutory scheme. But in the United States, the "plain meaning" rule of interpretation tends, in a Know-Nothing way, to snuff out these more subtle and eminently arguable tensions..

thus sharpening the particular issue at dispute and giving the judge little room to maneuver.¹²² Today's pleadings tend to leave the judge with unresolved "issues" which the judge can interpret as a license to vote for the issue that most comports with his legislative preferences. The result is that law becomes less predictable and judges become distracted from the pre-existing rights of the parties.

Today's law professors seem to operate on the assumption that all of law and legal practice was invented around the time President Roosevelt tried to pack the Supreme Court, except for a couple of antique cases like *Marbury v. Madison*. Yet they have been unwittingly impoverished by their own law-school education. How can they "see through" today's rules, procedures, statutes, or treaty provisions, without knowing where those words and ideas came from, or how the antithetical questions buried in them were resolved centuries ago? I claim that an ability to see through the language of the law and recognize where it came from is one of the most important professional skills in adversary argumentation or negotiation that a law school can teach.¹²³ When an expert reads a case or statute, she should be mentally unpacking it into its formative elements, into the theses and antitheses that characterized the first seven centuries of common-law development: law versus equity, formalism versus justice, common law coherence versus statutory law arbitrariness, plain meaning versus bounded reasonable meaning. These

¹²² In a recently decided case, Judge Charles Moylan supplied the following headnote that succinctly tells the story of pleadings that no longer do their job of narrowing down cases: "Confessed Judgment. Purchase of Residential Property. The Provisions for Payment. Partial Defaults of Payment. The Attorneys' Negotiations. The Confessed Judgment Notes. Confessed Judgment. The Allocation of the Burden of Proof. What is a Meritorious Defense? A Question of Law for the Court. A Meritorious Defense to What? The Antecedent Debt. Section 14-1315 Applies. Late Fees.; Of ships and shoes and sealing wax." *Niles LLC v. Antezana, Ct. Special Appeals Md.* (2006), at <http://www.courts.state.md.us/opinions/cosa/2006/2733s05.pdf>

¹²³ Law school is, of course, only the first three years of a lawyer's legal education. These years should be packed with disciplinary riches that the law firms cannot afford to teach. By the same token, certain "practical" techniques that lawyers will pick up anyway in practice ought to be excluded from the law-school curriculum.

tensions are there to be opened and fashioned into strong arguments. But one must first be able to identify them and know where they led when they were challenged years ago in the crucible of litigation, and how they gradually evolved into today's catch phrases.

None of this, it must be stressed, is history for history's sake.¹²⁴ All of it is history that remains embedded today in the linguistic forms, register, and jargon of the law that appear throughout our statutes, rules, regulations, and judicial opinions. Mouthing this jargon is relatively easy for an upperclass law student. (We turn out students who sound a lot like lawyers.) But unpacking these linguistic forms is an entirely different proposition. One must know what to unpack and whether or why it will help one's argument to unpack it. To learn these things, it is not enough to read a book or two on the history of the common law. Rather, class time should be spent in studying the cases and controversies that became the evolutionary steps in the remarkable development of a neutral and independent legal system of conflict-resolution. More important is the fact that evolutionary case analysis is perhaps the best way to teach students how to think. (Not quite 'how to think like a lawyer' but more like 'how to think like a lawyer should think.')

Law-think, if there could be such an expression, might be characterized as a working-through of the deductive limits of analogy and the analogical limits of deduction. And above all it is a study of relevance—my nomination for the most important word in legal education. No other word better characterizes the

¹²⁴ After reading an early draft of this Article, Professor Kate Litvak produced a zinger. She called this section "a set of random factoids about fifteenth century England!" http://prawfsblawg.blogs.com/prawfsblawg/2006/12/damato_and_the_.html#comments And so it doth seem to the moderns!

intellectual divide between undergraduate education in the arts and sciences and professional education in a law school.¹²⁵

The contested materials in a litigation are not only prior cases and current statutes, but also documents written by non-lawyers. Laypersons write the majority of contracts, wills, leases, and other documents. However, when private parties have a dispute over the meaning or application of what they have written, that meaning can only be settled definitively by a court. Yet the very process of submitting private documents to a court involves translating them into the language of law. Layperson expressions are transformed *sub silentio* into legal expressions.¹²⁶ This transformative process then recapitulates—for good or ill—all the historical antitheses of the now-legalized language that have been discussed in preceding paragraphs.

If all this vast *procedural* history has fallen into an Orwellian memory hole, how much more significant is present-day ignorance about *substantive* natural law? Natural law offers the only theoretical alternative to the legal positivism that has pervaded the law since Jeremy Bentham successfully proselytized for it at the end of the eighteenth century. In the most elementary terms, positivism says that law is whatever command the legislature enacts.¹²⁷ Yet beneath the surface of every single dispute in every case involving the interpretation of a statute or treaty provision lurks a potentially outcome-determinative battle between the forces of positivism and natural law. The latter goes back many centuries to Aristotle, then improved by Cicero and other Roman jurists, developed in part by Hobbes, Locke, and Rousseau, and comes largely to rest in

¹²⁵ And why doesn't anyone notice the relevant in the middle of the room? Ouch!

¹²⁶ For example, although laypersons may label their agreement a "Contract," it is not a legally binding contract if lawyers cannot eke the element of consideration out of the documentary materials.

¹²⁷ In countries without a written constitution, like Great Britain, this is the end of the story. If a country has a Constitution, the Benthamite interpretation would simply regard it as a higher set of commands.

Blackstone's *Commentaries*. In this powerful evolution of human rights against the state's assertions of power, natural law constituted a secular limitation on the powers of government.¹²⁸ Under natural law theory, a law enacted by a legislature (or by a king with legislative powers) was only valid if it was rationally connected to the goal of maintaining and preserving a society. Or to put it differently, a person gives up her liberty only to the extent necessary to support and maintain her society (which in turn symbiotically supports and maintains her).¹²⁹ No matter what the statutory language is at issue in a lawsuit, the very adversary system will cause its meanings to diverge. One side will be arguing for its literal (positivistic) meaning and the other side for its reasonable (natural-law society-preserving) meaning.

Accordingly, the bottom-line difference between positivism and natural law is that the former has no intrinsic limits: law is whatever the legislature enacts and the executive enforces.¹³⁰ By contrast, natural law holds that the citizen has no duty to obey a legislative enactment that is not connected to preserving society's existence. Although these broad principles seem better suited to a seminar in political theory than a courtroom, in fact they come up every day in every case or negotiation that engages the services of lawyers. Judges today are no different from their predecessors centuries ago in seeking

¹²⁸ Even Aquinas recognized the secular nature of natural law, but his writings were twisted by the religious autocrats of his day to extend natural law beyond its Aquinian boundaries and intrude it into people's private lives. This intrusion, which led to widespread belief that natural law included matters of private conduct and sin, has to be reversed so that lawyers can appreciate the intellectual depth and libertarian force of the secular natural-law tradition.

¹²⁹ For a discussion of the normative/legal linkages between citizen and society, see Anthony D'Amato, *Obligation to Obey the Law: A Study of the Death of Socrates*, 49 So. Cal. L.R. 1079 (1976). An excellent cross-disciplinary approach (using philosophical biology) to the connection between the person and society is Elliott Sober & David Sloan Wilson, *Unto Others: The Evolution and Psychology of Unselfish Behavior* 132-196 (1998).

¹³⁰ This was the devastatingly influential position of Hans Kelsen, perhaps the leading positivist of all time. For a summary analysis of Kelsen's positivism, see Anthony D'Amato, *Analytic Jurisprudence Anthology* 50-56 (1996).

to avoid arbitrary lawsuits based upon incoherent prior decisions or ill-worded statutes. The lawyer who appreciates the evolutionary history this can appeal to the judge's sense of legal coherence. The lawyer who has been schooled in both jurisprudential theories will be able to recognize and if necessary argue either side of the positivist or the naturalist position. If a lawyer is unaware of these foundational theories, nevertheless his courtroom opponent might know about them and use them to expose an embedded incoherence in the first lawyer's argument.¹³¹

Natural law requires a reasonable interpretation of statutes when the literal version is totally contrary to reason. But positivism merely relies upon plain meaning no matter what is meant, as the Supreme Court stubbornly exemplified in the *Locke* case.¹³² Instead, the natural-law position is that a statute is not "law" if it mandates an outcome so unreasonable as to amount to arbitrary interference in the rights of citizens—as the Supreme Court later realized in *Rogers v. Tennessee*.¹³³

For example, when King John signed the Magna Carta at Runnymede in 1215, its "law of the land" clause was a restriction upon him. Even though he was the supreme executive, supreme legislator, and supreme judge, he had no power or authority to change the "law of the land"—a phrase grounded in natural law and at that time universally

¹³¹ More specifically, a lawyer should be educationally equipped to argue either of the following two interpretive positions: (1) Positivism: she argues that only the statutory words "count," and therefore they must be construed according to their plain meaning as legislative enactments, no matter how unreasonable, absurd or evil their consequences. (2) Natural Law: she may also argue that law itself, including statutory law, is only valid insofar as it sets forth the necessary rights and duties of each person toward the society he or she lives in. If a legislative enactment appears to extend beyond societal necessity by intruding upon the personal life of the citizen, it must be construed strictly to avoid the taint of illegality that comes with pushing a rule into an area in which it does not legitimately belong. Under natural law, consequences "count."

¹³² *United States v. Locke*, 471 U.S.84 (1985). For commentary and questions on this case, see *Analytic Jurisprudence Anthology*, id. at 232-34.

¹³³ In *Rogers v. Tennessee*, 532 U.S. 451 (2001), a man knifed the victim who lay in a coma for fifteen months and then died. Under Tennessee law, "murder" requires death within a year and a day. The Supreme Court upheld the conviction, putting substance over form as it should have done in *Locke*. I should add that my positivist-captivated colleagues found the Court's decision in *Rogers* to be deplorable.

accepted as a limitation upon kingly powers. The king could issue commands, proclamations, decrees, or ukases, but he could not alter the law of the land.

To show how much we have lost since then in terms of human liberty, consider the Military Commissions Act of 2006.¹³⁴ In the current debate about the Act's constitutionality, scholars on either side seem to accept wholesale the proposition that unconstitutionality depends on finding specific clauses in the Constitution that the Act allegedly contravenes—such as *habeas corpus*¹³⁵ and various fair-trial provisions of the Bill of Rights. Scholars appear to accept without question that the Military Commissions Act *constitutes* the law of the land, having been duly passed by Congress and signed into law by the President. There is hardly any current awareness that the “law of the land” clause in the Magna Carta, which was imported directly into the Constitution in the Due Process clause, gives a substantive meaning to the term “law.”¹³⁶ It restricts Congress and the President acting jointly in their legislative capacities just as it restricted King John who was both chief legislator and chief executive. But Justice Stevens, in a recent habeas opinion highly regarded for its strict construction of Congressional statutes, opened the door for Congress to pass ameliorative legislation;¹³⁷ Congress promptly did so in the Military Commission Act. The natural-law position would have slammed the door shut: that Congress is constrained not only by specific clauses in the Constitution or

¹³⁴ 120 Stat. 2600 (Oct. 17, 2006).

¹³⁵ Even *habeas corpus* itself was just a historical implementation of the idea of “law of the land.” Early *statutory* restrictions on the Great Writ were eliminated by Parliament's enactment of the Habeas Corpus Act of 1679.

¹³⁶ The discredited *Lochner* case also found substance in the due-process clause. But it was a trivial and unwise stretch at the time; surely society's survival did not turn on the issues in that case. See *Lochner v. New York*, 198 U.S. 45 (1905).

¹³⁷ *Hamdan v. Rumsfeld*, 126 S.Ct. 2749 (2006).

strict inferences therefrom but also by constraints embedded in the very idea of “law.”¹³⁸

A knowledge of natural law would support the view that the Military Commission Act unconstitutionally suspends habeas corpus (except in factual instances of rebellion or invasion). Yet widespread ignorance of the centuries-old meaning of law has led us to the point of conflating law and legislation. We now tend to believe that Congress can do anything short of violating specific constitutional prohibitions.¹³⁹

The foregoing argument is of course so truncated that it can hardly be expected to change anyone’s mind.¹⁴⁰ It only works if the reader has had some law-school immersion in the mind-set of secular natural-law thinking. But this mind-set, although it characterized advanced legal thinking as it evolved from the time of Aristotle to the eighteenth century, is now considered dispensable.

¹³⁸ One might cite here the document that is never read in law schools: The Declaration of Independence of July 3, 1776. Its opening paragraph refers to the people’s separate and equal station “to which the laws of nature and of nature’s God entitle them.” The Framers of the Constitution were thoroughly familiar with natural law yet their writings are usually interpreted by today’s scholars as if informed by a positivist perspective that was not even developed until after the Constitution was ratified.

¹³⁹ Libertarians who want to downsize government should think of downsizing law. Positive law can do anything, can regulate anything. But if mentally placed in tension with natural law, the result is that the reach and scope of law are diminished.

¹⁴⁰ For extensions of some of these claims about natural law, see Anthony D’Amato, *Lon Fuller and Substantive Natural Law*, 26 Am. J. Juris. 202 (1981); Anthony D’Amato, *Jurisprudence; A Descriptive and Normative Analysis of Law* (1984); Anthony D’Amato, *The Moral Dilemma of Positivism*, 20 Valparaiso U.L.R. 43 (1985); Anthony D’Amato, *The Case for Natural Law*, paper presented at the Joint Conference on Legal Certainty, Universities of Edinburgh and Strathclyde, Sept. 15, 2006. The flavor of natural-law thinking is exemplified in Albert Alschuler, *Law Without Values: The Life, Work, and Legacy of Justice Holmes* (2002). The currently leading book on the natural law is John Finnis, *Natural Law and Natural Rights* (1980), which I cannot recommend because of its thoroughgoing confusion of natural law with morality. Natural law, as I view it, involves simply an expansion of the “self” in the idea of “self-interest” to include one’s society as well as oneself. “Morality” has nothing to do with it.

B. OPPORTUNITY COSTS

From the viewpoint of the present Article, the recently announced Harvard Law School curriculum takes a giant step in the wrong direction. New courses in legislation and regulation, international and comparative law, and problems and theories, will be inserted into the first year of study, steadfastly fixing that which is not broken. In announcing this bold initiative Harvard concedes that “room for the new first-year courses will be created by devoting fewer class hours to the traditional first-year curriculum (contracts, torts, civil procedure, criminal law, and property).” What class hours are destined for the ash-heap? Obviously the ones that are already being eroded, namely, cases and materials dealing with the historical and developmental foundations of those traditional courses. Forget about assumpsit, the Roman law of negligence, forms of action, common-law crimes, law versus equity, estates in land, natural law, or the rule against perpetuities. Forget about the developmental tensions encapsulated in these historical theses and antitheses. Don’t worry about how they were either synthesized or patched over in centuries of creative litigation. In fact, don’t even find out what it is that you may ignore.

There is another potentially devastating cost of packing non-law courses into the law curriculum. Judge Posner is calling for legal education to be reduced to two years—at the same time that he is advocating the insertion of more social science into the curriculum. Incoming students would undoubtedly prefer to get their J.D.s in two years rather than three. Social pressures for eliminating the third year of law school will surely be stimulated when the argument is made that only non-law courses need to be sacrificed

if law study is reduced to two years. Perhaps this is what Judge Posner has in mind: the Bar Accreditation Committee will more likely support the reduction of legal education to two years if law schools have almost a year's worth of non-law courses in the curriculum.¹⁴¹

Yet from a law faculty's point of view, a large part of our professional responsibility as teachers is to advance the discipline of law at its cutting edges or at least to restate existing law in a more coherent and citizen-friendly fashion. To do this work in addition to our teaching responsibilities requires time to think and write. We owe to the three-year program the slack that enables us to be a research faculty. If one of those years is thrown out, most of the research time will go down the drain with it. It is almost unintelligible that the Harvard Law faculty, priding itself on its research, would unanimously approve a new curriculum that could turn out to be a suicide pact.

To the extent that Harvard Law School is a leader in legal education, other schools might adopt its new curricular ideas.¹⁴² What are the qualitative opportunity

¹⁴¹ This may not happen right away. But young professors with interdisciplinary credentials will tend to vote in favor of adding other interdisciplinarians to the faculty, and soon a faculty interest group may be created that is politically unstoppable.

¹⁴² Stanford Law School has just announced its own curricular reform independently of Harvard's. See <http://www.law.stanford.edu/news/pr/47/>. On one point it is a merciful improvement: the first year of study at Stanford is left alone. Dean Larry Kramer persuasively argues that students now perceive the second and third year of law school as doctrinally repetitious. But the obvious cure—to build course prerequisites into the curriculum so that the second and third year students will increasingly confront the leading adversarial edge of the courses they take—is not mentioned. (Much of student dissatisfaction with upper-level courses is that sometimes half the class has not taken the introductory course, with the result that the professor feels he must reinvent the wheel for these students. In consequence, the students who have taken the introductory course give up and walk away.) I should also mention the recent innovation of offering students a four-year program that combines the law degree with one from another professional school such as the business school. The result—demonstrating that two years is sufficient for learning law—may be another nail in the coffin of the three-year law school educational program. And as far as Stanford's providing students with useful “tools” to confront a complex, technological, global world, why is a course in Accounting so studiously avoided in Stanford's (as well as Harvard's) curricular reforms? If there is any non-law course more essential than Accounting to the student who wants to practice corporate and commercial law, I would like to know what it is. The obvious explanation is that curricular reform is all right so long as it makes the customers happy. When Accounting used to be required, students hated it with a passion.

costs? Simply that Harvard is emphasizing the teaching of applications instead of basics, perspectives instead of foundations, implementation instead of innovation, training instead of mastery, description instead of analysis, knowledge instead of understanding.

VIII. CONCLUSION

I have perhaps been too personal in writing this Article. I feel the way my mentor Lon Fuller predicted about authors who write legal articles. I quoted his remarks above in footnote 89. They are from a book I happened to read during my first year at Harvard Law School, *The Law In Quest of Itself*—a book that changed my life. Whenever I write about law, I've felt the tension that Professor Fuller described: a tension between the dictates of conformity and the siren song of creativity, between the law that is and the law it aspires to be.

I can assure the reader that I am not writing out of a personal preference for the developmental history of law as opposed to some other subject. I recall that as a law student poring over the quasi-mathematical formulas of estates in land I would have gladly swapped Property for Critical Race Theory or Feminist Jurisprudence (had they been offered at the time) and thrown in as lagniappe my new Smith-Corona portable electric typewriter—the ultimate in word processing.

Nor do I write out of a distaste for outside disciplines. As a teacher, I have found it remarkable that whenever I do the cross-disciplinary thing by introducing political science into my international law classes, the students seem to relax and breath a sigh of

relief: at last here is something familiar. If I then criticize the political-science perspective to the point where I think it has been thoroughly demolished, nevertheless it comes gushing back on the final exams. When you teach law, there are two messages you are conveying: what you say, and the class time you consume in saying it. The latter is a message I cannot refute. Thus the students interpret class-time as signifying something that may come up on the final exam. Even when the questions on my final exam do not call for it, it comes back at me anyway.

Perhaps because of familiarity to students from their college years, interdisciplinary subjects in law school act as a “strange attractor.”¹⁴³ Students certainly welcome these courses, and I suspect that students have added lots of momentum to the Interdisciplinary Express.¹⁴⁴

Yet the reader might ask why am writing about the future of legal education at a time when my own teaching career is presumably entering its vintage years. Professor Fuller supplied the answer and followed it himself: any person seriously interested in the philosophy of law should devote a portion of his or her time to thinking about legal education.¹⁴⁵ Fuller’s world, perhaps like Hegel’s,¹⁴⁶ was a relational world. Things and ideas do not exist in themselves but rather in relation to other things and ideas. Legal philosophy does not exist apart from how law is taught. Contracts do not exist apart from

¹⁴³ In chaos theory, if a point or a set “attracts” trajectories, the attractor is “strange” if the trajectories stay close to the attractor even when they are disturbed. It’s as if the trajectories have learned how to behave less randomly. (I hasten to add, however, that there is no need to introduce chaos theory as another interdisciplinary course in the law-school curriculum; most students would say it is already there.)

¹⁴⁴ If students pay us to teach them law, why do we pay attention to their curricular demands? My biases are made explicit in Anthony D’Amato, *The Decline and Fall of Law Teaching in the Age of Student Consumerism*, 73 J. Leg. Educ. 461 (1987).

¹⁴⁵ Even if one gets carried away, as I have, with inserting too much jurisprudence into the discussion of legal education.

¹⁴⁶ See Anthony D’Amato, *Towards a Reconciliation of Positivism and Naturalism: A Cybernetic Approach to a Problem of Jurisprudence*, 14 W. Ont. L. Rev. 171 (1975);

the reliance interest in them. In citing a precedent, you not only need to show that it is on all fours with the current case but that it should be. The law that *is* is not distinct from the law that *ought to be*; rather you can't have one without the other. The data of law, it bears repeating, is radically unlike any empirical data in the world.

In sum, the present Article has offered three theories to support the proposition that it is cost-ineffective to devote law-school resources to external disciplinary expertise in the hope that new or useful ideas will result from interdisciplinary collaboration. (Hiring a joint-degreed person counts as an allocation of resources to obtain the extra-legal expertise of that person.) They are:

(1) It is difficult enough for a law professor with an inchoate but publishable idea to find a willing collaborator from another discipline. If she confines her search to her own colleagues who have joint degrees, the unlikelihood increases by several orders of magnitude. The unlikelihood remains just as high if she happens to be the one with the joint degree.

(2) The concept of generating cutting-edge ideas by collaboration across disciplines should be re-thought. This Article proves that successful collaborations of the idea-generating type are so rare that it is clearly cost-ineffective to plan for them.

(3) If a law school adds interdisciplinary training to its curriculum, other more important courses will be crowded out. The most severe opportunity cost is the abandonment of the very heart of the legal discipline, namely, understanding the origins and meanings of its words and phrases as those meanings evolved over centuries of antithetical clashes in litigation.

Lest I be misunderstood, may I say that I strongly favor cross-disciplinary collaborations involving a division of labor between law and some other discipline and necessitated by the real-world overlap between disciplines. These kinds of collaborations comprise over 99% of joint-authored cross-disciplinary articles and books. I only raise a red signal for “interdisciplinary” collaborations from which are expected original ideas or new solutions to outstanding problems. It is just this kind of attractive expectation that is both cost-ineffective and opportunity-costly.

Law is not a game. It is not a business. Students pay for a legal education because there is no other path to becoming a lawyer. The public pays lawyers because there is no other way to access the legal system that controls their lives. Lawyers in turn have a professional obligation (even if it entails financial loss in some cases) to serve the public. As a result, law faculties end up with the monopolistic luxury of unsupervised control over the curriculum. But with that freedom comes the responsibility to take seriously the origin and evolution of the discipline and the mastery of its forms of language, all in the service of presenting to courts and other decision-makers the best possible case for one’s client. And that goal, in turn, is subservient to justice—a justice that is prior to regnant notions of social welfare.

- end -

