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Pushing Evolutionary Analysis of Law or Evolving Law: Design Without a Designer

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PUSHING EVOLUTIONARY ANALYSIS OF LAW OR EVOLVING
LAW: DESIGN WITHOUT A DESIGNER

*Jeffrey Evans Stake**

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“Imagine no possessions. I wonder if you can.”
-John Lennon, “Imagine”

John Lennon apparently found it harder to imagine a world without possessions than to imagine “there’s no heaven,” which he said was “easy if you try” or to imagine “there’s no countries,” which “isn’t hard to do.”¹ Lennon was right to wonder if I could imagine a world without possessions. Indeed, it is beyond me. Perhaps my imagination has ossified from teaching Property for so many years. But, even when I started teaching, I struggled to imagine a human world without possessions.²

In his Dunwoody Distinguished Lecture in Law,³ Owen Jones takes us on a Lennoesque exercise in imagination, imagining what law could

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1. John Lennon, *Imagine*, on *IMAGINE* (Apple Records 1971).

2. Perhaps that is why I have found teaching property so enjoyable, so comfortable.

3. Owen D. Jones, *Proprioception, Non-law, and Biolegal History*, 53 FLA. L. REV. 831 (2001).

be—but is not—in order to better understand what it is, in order to develop, in his words, a proprioceptive sense of where law is and where it is going.⁴ Overall, I find this an enlightening enterprise, and I wholeheartedly agree with Jones's central thesis that behavioral biology can help us understand the law. In this response, I contend both that Jones claims too much for the ability of science to improve the law and, more important, that Jones proceeds too cautiously in his use of evolutionary theory. Biology and evolution help resolve some of the questions Jones raises in his Article. Although he works at the vanguard of law and biology, Jones does not push the idea of evolution by natural selection far enough.⁵

I. UNDERSTANDING THE EVOLUTION OF LAW

Jones starts off with a paradox: law is about regulating behavior but it has no theory of behavior. Treating this pair of facts as a paradox reflects the same assumption that underlies William Paley's argument for God; Jones seems to be thinking, as Paley did, that good design comes from a designer.⁶ Paley famously argued that if we find a watch while walking on the heath, we cannot assume it had always been there.⁷ “[T]he watch must have had a maker”; the pieces did not fall together by accident.⁸ A greater intelligence somewhere outside of the watch, an artificer, has comprehended its construction, designed its use, and formed it to function as a device for telling time.⁹ Likewise, Paley's argument continues, the high degree of functionality in the parts of organisms on Earth is evidence that they were designed, rather than mere accidents of chemistry.¹⁰ The lens

4. *See id.* at 848-49.

5. To be fair, Jones's Article is more about the narrower topic of behavioral biology than evolution by natural selection. However, as Jones notes, lying at the heart of behavioral biology is the question of what mental modules would have been selected by evolutionary pressures. *Id.* at 834-35 n.4.

6. WILLIAM PALEY, *NATURAL THEOLOGY: OR EVIDENCES OF THE EXISTENCE AND ATTRIBUTES OF THE DEITY COLLECTED FROM THE APPEARANCES OF NATURE* (Early Am. Imprints, Second Series 1802). I am not claiming that Jones thinks biological design must come from God. I am merely pointing out that he has slipped into a similar mode of thinking. Jones says, “Behavioral biology enables us to better understand the processes that built the human brain that has in turn built that structure of law.” Jones, *supra* note 3, at 836. I argue that our brains are a key part of the environment within which the law grew, but they are not wholly responsible for having “built” the law. That rabies cannot be understood without an understanding of the brain and the brain's role in behavior does not mean that the brain built rabies.

7. PALEY, *supra* note 6, at 1.

8. *Id.* at 8.

9. *Id.*

10. *Id.*

of the eye, like the lens of the telescope, must have had a designer.¹¹ The orderliness and functionality we see in living things could not exist without a supreme being, God.¹²

There is, however, another explanation of the apparent “design” of living creatures that does not rely on the existence of any creative god. The Darwinian explanation, put too briefly, is that organisms are the way they are because that works for making more organisms. Evolution did not need to understand itself for it to work. Nor did the organisms evolving need to understand what was happening. Of many random changes, some were beneficial for producing offspring, and those tended to become more prevalent merely by virtue of their benefit.

If that approach works to explain the structure of carbon-based life forms, it might also work to explain systems of law. Jones says that “behavioral biology enables us to better understand the processes that built the human brain that has in turn built that structure of law.”¹³ By attributing law’s construction to the human brain rather than to unthinking selective processes, Jones seems to have assumed that human brains designed the law, just as Paley assumed that some being must have designed animals. Of course, Jones is more correct than Paley was. Humans do design laws. I am arguing, however, that humans are not wholly responsible for the design of existing legal structures and I am contending that evolutionary analysis can help us to understand the law without the intermediate step of understanding the mind. If we can see law as an organically developing set of legal ideas, we can apply evolutionary theory directly.¹⁴ Richard Dawkins coined the term “meme” to refer to cultural information that replicates.¹⁵ Surely our laws are examples of replicating bits of information. Seeing laws as memes resolves Jones’s paradox; laws exist because they work for regulating behavior.¹⁶ To make an analogy, the first people to salt meat had no good theory of how salt preserved food. But

11. *Id.* at 14.

12. *Id.* at 36.

13. Jones, *supra* note 3, at 836.

14. Jones acknowledges this memetic approach to understanding law when he says “I am not claiming that patterns in existing law are not also directly susceptible of identification with methods of evolutionary analysis.” *Id.* at 857. Nevertheless, he does not make much of it. Although I think that this alternative avenue of analysis is important, I do not criticize Jones for failing to speak to a topic he did not intend to address. I wish only to make it clear that there are ways of understanding the development of the law that do not depend so heavily on humans knowing why laws work.

15. RICHARD DAWKINS, *THE SELFISH GENE* 205-06 (Oxford Univ. Press 1976).

16. A law can “work” in various ways. Sometimes the law serves the interests of those who write or enforce the laws. Other times the law serves the interests of the population governed by it. It is also possible for a law to work in the sense that it helps perpetuate itself or the larger legal structure in which it is embedded. In addition, a law does not necessarily work by modifying the behavior focused upon; jaywalking proscriptions may be useful in regulating other behaviors.

theory did not matter; the salting meme worked. Likewise, early peoples did not need a true theory of human behavior to see that certain socially enforced rules served a useful purpose of reducing behaviors with negative externalities. Laws did not have to be based on science to work any more than the practice of salting meat had to be based on science to work. What works tends to get reiterated.

Throughout history, the adoption and perpetuation of laws was of course aided, in part, by a series of thoughts and theories and philosophies about human behavior held by those who had the power to make the rules. But those theories did not have to be true. They did not have to be well accepted among the public or among lawmakers. It was enough that the laws worked in a general way to help perpetuate the people enforcing the laws or the societies adhering to them. Even that was not necessary. It is possible for laws to exist, to be passed down, even though the laws are harmful to their host societies. Eventually, such harmful laws, might, like communism in some places, put their hosts under such a competitive disadvantage that the society holding those laws has a hard time surviving. But it can survive for a while. We cannot tell by the mere existence of laws that they are beneficial for society. There are many ways for ideas, legal and otherwise, to survive and replicate.

The point here is that a good theory of human behavior is not necessary for the creation or continuation of an effective law. The lawmakers of a state could believe that alcohol consumption switches control of behavior from the good side of the brain to the evil side. Based on that theory, they could write a law imposing a \$10.00 tax each time a person drinks an alcoholic beverage. The law would discourage alcohol consumption even though the underlying science was bad. Jones says that the lever of law works against a fulcrum of science, a behavioral model provided by the science of human behavior.¹⁷ “[L]aw can be no more effective than the solidity that its fulcrum affords.”¹⁸ One response is that the law operates not as a lever but instead as a magnet, pulling or pushing on human behavior. Even assuming law acts as a lever, however, the fulcrum on which the law pivots is not science, for science is merely our knowledge of the way things work. The fulcrum for law’s leverage is not our knowledge. The fulcrum is, instead, the underlying truth, the underlying patterns of human behavioral response to stimuli. It is the reality, not our model, that matters. Just as a billiards player does not need a theory of physics to make use of the fact that the angle of reflection equals the angle

17. Jones, *supra* note 3, at 841. “[T]he fulcrum . . . is the law’s behavioral model. By the term behavioral model, I refer to our *conception* of where behavior generally comes from . . .” *Id.* (emphasis added).

18. *Id.* at 845. In the same vein, he says “law’s efficiency is dependent on a solid . . . behavioral model.” *Id.*

of incidence, we can make use of the behavioral fulcrum, and have for a long time made use of that fulcrum, without much scientific understanding of it. We can make a law, observe its effects on behavior, and determine whether to keep the law, all without any theory.

For similar reasons, I am skeptical of the potential for behavioral biology to yield much proprioception regarding where the law will go in the future. Certainly behavioral biology will play a part in reform. And when it gets there, various forms of evolutionary analysis will help us to understand how it has done so. But the ability to predict where law will go next is beyond my horizon, even when I stand on the shoulders of giants. The problem is that there are too many interdependent variables. I have no more hope for sensing where the law will grow than sensing how humans will evolve.

Jones says that the idea that law “evolves” toward efficiency is “analogical” to biology.¹⁹ While I agree that the evolution of law is analogous to the evolution of biological organisms, I do not believe that the forces working on law are merely similar to the forces of natural selection; they are the same forces of selection. All that is needed for natural selection is reproduction with variation, errors that are large enough to make a difference to further reproduction. A change in hair color might not be enough of an error in humans to be the basis for variable reproduction, but might suffice in a species that relies on camouflage. Imperfect reproduction is enough to generate changes in the relative frequency of any replicators, including legal ideas. And changes in the existing mix of laws is evolution of law.²⁰

I want to be careful to point out that I am not arguing with many of Jones’s points. I am no more denying that we have a common brain structure than I would deny that we have common internal organs or feet and hands. Nor am I arguing with the important observation that law works as well as it does for controlling behavior because we share a common brain structure. However, I do take issue with the idea that the efficacy of the law depends on our scientific understanding of that common structure. Useful rules can evolve without our knowing why they work. We do not need to know why punishment reduces many behaviors in order to know that it does. In some cases, we do not even have to know that a law works well (much less why) in order for that law to survive, to replicate into the future.

19. *Id.* at 858.

20. To get extinction of some species of animal (or law), we need death in addition to replication with variation, but death is not necessary for evolution if evolution is defined as a shift in the mix of organisms.

A. *A Theoretical Cautionary Note*

This brings me to my second point: it is important not to claim too much for the ability of science to improve law. In keeping with the idea of a watchmaking intelligence and inconsistent with the idea of law as a complex of memes, Jones contends that a better science of human behavior will lead to better laws for regulating human behavior. That sounds good, indeed it sounded good enough to me in the past to have agreed with it,²¹ but as Paley's argument from design exemplifies, sounding good does not make it true. Certainly, a watchmaker can make a better watch if he understands how it works. But law has other ways of improving, independent of its designers' knowledge. Law can evolve in beneficial directions without being designed by us based on a true theory of human behavior, indeed without being designed by us in any but the very loosest sense.

Among the many theories of legal evolution, some focus on the possibility that law has evolved toward an efficient set of rules. One hypothesis states that inefficient laws will lead to bad situations that will create more opportunities for re-litigation than would the efficient rule.²² Therefore, even assuming that judges make decisions randomly (i.e., without any design at all), and that therefore some efficient rules might be discarded in favor of inefficient rules, the whole body of law might nevertheless evolve in a direction of greater overall efficiency. Jones is aware of this literature,²³ yet he, like many in the academy, shows too little appreciation for the random accretion of small improvements. To take a simple example, Indiana might adopt a loitering law by copying another state's statute and later find that the prohibition was quite useful in helping police to apprehend drug dealers.

This argument goes further than merely saying that law might improve by the forces of natural selection working upon replicating ideas. The argument from natural selection warns that intended improvements based on scientific knowledge of the brain might actually make law worse. Evolutionary analysis suggests that as genes make up a body, specific laws make up an integrated, organic meme complex. We might think we can

21. See generally Jeffrey Evans Stake, *Can Evolutionary Science Contribute to Discussions of Law?*, 41 JURIMETRICS J. 379 (2001).

22. See generally Robert Cooter & Lewis Kornhauser, *Can Litigation Improve the Law Without the Help of Judges?*, 9 J. LEGAL STUD. 139 (1980); Herbert Hovenkamp, *Evolutionary Models in Jurisprudence*, 64 TEX. L. REV. 645 (1985); George L. Priest, *The Common Law Process and the Selection of Efficient Rules*, 6 J. LEGAL STUD. 65 (1977); Paul H. Rubin, *Why is the Common Law Efficient?*, 6 J. LEGAL STUD. 51 (1977); Jeffrey Evans Stake, *Status and Incentive Aspects of Judicial Decisions*, 79 GEO. L. J. 1447, 1477-92 (1991).

23. See Jones, *supra* note 3, at 858 n.21.

improve the law by tinkering with a particular rule, but it is unlikely that we will anticipate all of a rule's interconnections with other laws and all of the effects on society. Just as there is no certainty that scientific changes to an ecosystem or a human's genetic structure will be beneficial, there is no certainty that scientific changes to our legal structure will turn out to be improvements.

B. *Preserving a Culture Within Which Good Laws Can Thrive*

Beyond the danger that individual reforms might reduce human welfare, there is an additional risk raised by placing undue emphasis on science, the danger of universality. Some scientific reformers will believe so strongly in their positions that they will urge universal²⁴ adoption of their prescriptions. The reason this is risky is that there is much to be said for allowing experimentation by variation. If two states adopt different rules, we might learn about the relative merits of those rules by studying subsequent effects. When all states have the same rules, it becomes harder to make such comparisons. Moreover, even without studied comparisons, variation allows competition, which creates the possibility for better systems to outrun weaker ones. Finally, transitions are much less costly when states avoid the mistaken reforms initiated in a few jurisdictions.

There are already strong forces pushing us away from the experimental approach. The American Law Institute-American Bar Association publishes "Restatements"²⁵—some of which have little to do with actually restating the law²⁶—that push courts toward adopting the same rules. On the legislative front, the Commission on Uniform Laws publishes and promotes statutes that would make the law in many areas the same across the nation.

This monolithic approach is not always a bad thing. There are costs to maintaining different laws in different jurisdictions. One obvious cost is that lawyers in one state cannot practice in another. This is bad for the lawyers wanting to practice in new jurisdictions and it could raise the costs to purchasers of legal services. However, it is probably not terribly costly for clients. For most types of lawyering, the market is thick and

24. The meaning of "universal" will vary with the context. If the laws of Property are at issue, universal adoption means in all of the States, or perhaps all common law countries. If human rights are at issue, universal adoption means adoption by most or all nations on Earth.

25. See, e.g., 69 U.S.L.W. 2736 (2001) (reporting that the American Law Institute approves Tentative Draft No. 3 of the Restatement (Third) of Property, regarding "Wills and Other Donative Transfers").

26. For evidence that the Restatement may deviate substantially from the existing law, consider that the Restatement (Third) of Property (Servitudes) eliminates the touch and concern element from the doctrine of servitudes. RESTATEMENT (THIRD) OF PROPERTY: SERVITUDES § 3.1 cmt. a (2000).

competitive enough that prices are close to marginal cost and would not diminish much if all lawyers could practice in all jurisdictions.

A better example of the costs of legal diversity might be laws regarding childhood vaccinations. Requiring or facilitating vaccinations around the world can lead to the eradication of diseases such as smallpox that will remain a threat if vaccinations take place in only some jurisdictions. As another example, a business in New York might hesitate to trade with one in California if it has no confidence that the basic rules of commerce will be those it is accustomed to following. Network externalities can make uniformity important.

But the beneficial network externalities are not so large in other legal subjects. The costs of having differing levels of state sales tax are not too great, and in return states can experiment with different levels of tax and learn from, and even compete with, each other. On the flip side of the revenue coin, there are not many serious proposals that all states should be required to spend the same amount on higher education. South Carolina and North Carolina diverged some years ago on that issue, and we can learn today from that natural experiment.

To take an example outside of the budgetary domain, it is not hard to argue that there has been a benefit to diversity in recording acts. Many of the early acts were what could be classified as “pure race” statutes. Under these statutes, subsequent purchasers take priority over earlier purchasers merely by recording first. That approach apparently looked good to many reformers of the time. But it quickly became obvious that such statutes created possibilities of unfairness and abuse. A subsequent purchaser would defeat the claim of an earlier buyer even if the subsequent purchaser was fully aware that the earlier buyer had a legitimate claim of ownership. Because the recording act reform was piecemeal rather than universal, the courts and legislatures of the various states were able fairly easily and quickly to amend their laws so that bad faith would prevent a subsequent purchaser from taking title from an earlier owner. Those confronting bad laws had the opportunity to learn from neighboring states and had the power to implement reform without having to get a whole nation to go along. Thus the recording law developed fairly quickly into a set of fairer rules of priority.²⁷ There are large benefits to legal diversity, a form of memetic diversity,²⁸ just as there are large benefits to genetic diversity.

27. This improved fairness may have come at the price of diminished efficiency.

28. I would like to suggest that we use the word “leme” to refer to legal memes, but it is not clear how the meaning would differ from that of “rule.” The benefit of using the word “leme” would be that it would more directly suggest the replicating nature of legal rules.

C. *Empirically Founded Cautionary Notes*

In addition to the theoretical objections to placing too much emphasis on science, there are empirical issues as well. There are, of course, examples on both sides. It appears that science relating to absence of differences between races and the unequal effects of “separate but equal” helped the Supreme Court to reach its decision in *Brown v. Board of Education*,²⁹ and most scholars would agree that decision improved the law. Better “germ theory” has led to improvements in the substance of international law on infectious disease control.³⁰ Science relating to the difference between men’s and women’s reactions to sexualization of the workplace (pornography, sexual banter, touching, etc.) has been used to modify the reasonable person standard in sexual harassment cases to make it a reasonable woman standard where the plaintiff is a woman.³¹ In addition, it is likely that as science creates new investigatory tools, the law of evidence will change to allow evidence based on such tools.

But science does not always lead to better law. In some cases, the policymakers are unaware of the science or they ignore scientific findings. For example, there is evidence that police line-ups would produce fewer false positive identifications (and the same number of accurate identifications) if the witnesses viewed the pictures of the suspects sequentially instead of as a group.³² Yet the law does not require sequential line-ups. Preliminary research also suggests that counseling for convicted wife-beaters might decrease the incidence of repeat violence, but prosecutors in Florida sued to stop the research program.³³ An article by Alex Tanford regarding jury instructions indicates that appellate courts actually changed the law in the opposite direction from what scientific research would support.³⁴ In other cases, the reforms are questioned as ill-advised. For example, legal realists reformed commercial law to conform to what social science said were actual business practices, but neo-formalists are now arguing that some of those changes were not improvements.

In sum, there are both theoretical and empirical arguments that law reforms based on new scientific knowledge will not always turn out to be improvements. I am not saying we should not try to use what we know from science to improve the law, but we should not be overly confident

29. *Brown v. Bd. of Educ.*, 347 U.S. 483, 493-95 (1954).

30. See DAVID FIDLER, *INTERNATIONAL LAW AND INFECTIOUS DISEASES* 53 (1999).

31. See *Ellison v. Brady*, 924 F.2d 872, 878-81 (9th Cir. 1991).

32. See Atul Gawande, *Under Suspicion: The Fugitive Science of Criminal Justice*, *NEW YORKER*, Jan. 8, 2001, at 52.

33. *Id.*

34. J. Alexander Tanford, *Law Reform by Courts, Legislatures, and Commissions Following Empirical Research on Jury Instructions*, 25 *LAW & SOC’Y REV.* 155, 160 (1991).

that it will. Claiming too much for the application of science, even behavioral science, will lead to disappointment and distrust, making it harder for science to play a constructive role.

II. POTENTIAL BENEFITS OF EVOLUTIONARY ANALYSIS

That substantial caveat aside, in the following parts I suggest a few ways in which evolutionary thinking can contribute to positive and normative analyses of law in addition to those mentioned by Jones.³⁵ I have already discussed how it can help us understand the organic development of the law. Beyond that, first, a closely related application uses evolutionary analysis to understand the development of other, non-legal, ideas and to design law to fit with that understanding. Second, the new science of behavioral biology is helping us understand the contours of traditional legal doctrine. Third, behavioral biology will affect the way we think about legal concepts such as moral responsibility, perhaps helping us both to reach a more satisfactory philosophical foundation for our law and to develop rules that fit our normative theory. Along these lines, science might also help us to see and accept alternatives to legal sanctions, alternatives such as drugs that influence behavior by altering brain chemistry. Fourth, behavioral biology will help us more accurately predict the costs and benefits of legal rules designed to influence behavior. One of the problems faced by economics is that there is no way to compare preferences. The general scale of "utility" is invoked, but there is little way to predict from economic theory which status yields more utility. Evolutionary analysis has the advantage of placing all preferences on a single ultimate scale, that of yielding grandchildren.³⁶ If one preference led to more grandchildren than another, the former should be stronger today. Although much of the analysis is the same in economics and biology, biology's single utility scale should offer additional predictive and explanatory power.

A. *Developing New Doctrine*

A greater understanding of how ideas behave may allow us to improve our laws relating to those ideas. For example, memetic analysis has provided an alternative to the traditional marketplace of ideas metaphor often invoked in First Amendment jurisprudence.³⁷ The marketplace metaphor suggests that we produce, offer for sale, and buy (or reject) ideas.

35. See Jones, *supra* note 3, at 834-35 nn.4 & 5.

36. This is, of course, an oversimplification of the idea of inclusive fitness, which includes all relatives according to their relatedness.

37. See Jeffrey Evans Stake, *Are We Buyers or Hosts?: A Memetic Approach to Free Speech*, 52 ALA. L. REV. 1213, 1214 (2001).

We humans are the active agents; ideas are mere passive products. This is, of course, a comfortable thought. If ideas have no agency, humans must be in control. Humans may be evil, but at least we know the enemy, and it is us. Like the trash lying around the Okefenokee Swamp in the “Pogo” comic strip,³⁸ inert bad ideas could be cleaned up by getting people to change their evil ways.

But what if bad ideas are more like viruses than trash. As we have seen with AIDS, viruses are not so easily contained and cleaned up. The solution requires more than getting everyone to agree that they will not get AIDS because the virus has agency. It acts against our will. As noted above, ideas are replicators too. The better replicators have ways of making it into the next generation whether we want them to survive or not. Ideas are in it for their own good, not for ours. Thus, it is hopelessly optimistic to believe that the ideas that survive and replicate will be those that are best for human welfare. The truth will not always be the winner in the battle between ideas.³⁹ The ideas that survive will be those that are good at surviving. Sometimes being good for humans will be good for an idea’s survival. But ideas can find ways to replicate even if they are not good for people.

One of the ways ideas improve their chances of replication is to kill off the holders of opposing ideas, a form of memocide.⁴⁰ Some ideas take advantage of the graciousness of other ideas, using their tolerance of opposing ideas to get a foothold and then eliminating tolerance when they are in control.⁴¹ For that reason, our law, our First Amendment jurisprudence, should not be read to protect all ideas. Tolerance will last only as long as the benign ideas are in control. When a bad idea such as

38. Walt Kelly, *Pogo: We Have Met the Enemy and He Is Us*, Pogo, Earth Day cartoon poster, 1970, available at http://www.igopogo.com/we_have_met.htm.

39. As Blaise Pascal observed, it could be rational for humans to believe in Christ as our Savior even if it were highly unlikely that Christ is in fact our Savior. See generally BLAISE PASCAL, *PENSÉES: THE PROVINCIAL LETTERS* (W.F. Trotter trans., Random House 1941).

40. Genocide is the elimination of humans holding competing genes. Memocide is the elimination of humans holding competing memes. Stake, *supra* note 37, at 1240.

41. For evidence that the Nazis used exactly this approach, see Justice Jackson’s dissent in *Terminiello v. Chicago*, 337 U.S. 1, 35 (1949), quoting Joseph Goebbels:

[W]hen democracy granted democratic methods for us in the times of opposition, this [Nazi seizure of power] was bound to happen in a democratic system. However, we National Socialists never asserted that we represented a democratic point of view, but we have declared openly that we used democratic methods only in order to gain the power and that, after assuming the power, we would deny to our adversaries without any consideration the means which were granted to us in the times of [our] opposition.

Terminiello v. Chicago, 337 U.S. 1, 35 (1949).

Naziism gains the upper hand, tolerance will be nowhere to be found. The power of the evil memes lies in their ability to silence the opposition by threatening harm to holders of opposing ideas. Therefore, the prescription provided by memetic analysis is that states should have the power and freedom to outlaw promulgation of ideas that urge harm to holders of opposing ideas.

The application of memetics to free speech and other First Amendment issues is just one example of better living through science. As the evolutionary science of memetics advances, we may see new applications to our laws about various forms of intellectual property, patents, trademarks, and copyrights. Wherever the subject matter of the law is ideas, memetics may be useful.

B. *Understanding Traditional Doctrine*

In the law of property, ownership often turns on first possession. But what does it take to establish possession? In a nineteenth century case known to generations of law students, *Pierson v. Post*,⁴² the New York Court of Appeals confronted this question. The judges hearing the case decided that title in a fox belonged not to the first person to hound it but rather to the first person to grab it.⁴³ Although it could be argued that this important legal line in the sand is arbitrary, evolutionary theory suggests that humans may share a common understanding of what level of physical control is enough to make a person an owner.

John Maynard Smith and others have developed a theory that animals may be genetically programmed to be assertive in defending food in their possession and deferential with regard to food held by other similar animals.⁴⁴ This is sometimes called the “Bourgeois” strategy.⁴⁵ Depending on the payoffs to fighting, this strategy can be an evolutionarily stable strategy.⁴⁶ For the strategy to work, both parties to a potential fight must be able to tell which has “possession;” the two must respond to the same environmental trigger. Those prehistoric humans that did not have the common sense of possession found themselves trying to grab what would be defended fiercely rather than grabbing what could be taken without encountering much resistance. Those who did not know the prevailing

42. 3 Cai. R. 175 (N.Y. 1805).

43. *See id.*

44. JOHN MAYNARD SMITH, *EVOLUTION AND THE THEORY OF GAMES* 22 (1982); ROBERT SUGDEN, *THE ECONOMICS OF RIGHTS, CO-OPERATION, AND WELFARE* 101-03 (1986). Eric Posner has discussed the application of the Bourgeois strategy in the development of constitutions and property. ERIC POSNER, *LAW AND SOCIAL NORMS* 45 (2000); Eric A. Posner, *Constitutional Possibility and Constitutional Evolution* 11 (on file with author).

45. SMITH, *supra* note 44, at 22.

46. *Id.* at 23.

definition did not know when to be assertive and when to be deferential. Humans without the property-recognition gene had their genes eliminated from the gene pool.

In other words, evolutionarily stable patterns of behavior could have developed around a shared sense of what is in a person's possession and what is not. It is possible that a common sense of possession built into our brain structure helps to solve the coordination problem that arises from scarcity of goods. Notice that communication is another large coordination problem. Because communication aids reproduction, our brains have evolved in a way that helps us communicate. Just as we have brain modules for grammar,⁴⁷ we might have a sense of ownership that is rooted in our biology.

There are some physiological facts that make the theory plausible. Scientists have established that a certain group of neurons fire when a monkey grasps a piece of food in a certain way.⁴⁸ Moreover, when another monkey or the human experimenter grasps the food in the same way, the same neurons (called "mirror neurons") fire in the monkey.⁴⁹ Although there are "mirror neurons" for many actions, the fact that there are neurons activated by observing the act of grasping raises the possibility that there may be neurons associated with recognizing possession. We may be programmed to recognize when we have a certain proximate relationship to a physical object and, by mirroring, to recognize when others have a similar relationship to an object. Our brains may then determine "ownership" by combining that relational data with information about previous relationships. Certain combinations of information—"it is in my grasp" plus "there is no previous owner"—may throw a biological switch making us more willing to be assertive in preventing others from taking the thing. Such a neurological structure may provide the basis for a very "natural" law of property.

In short, even in the absence of law (perhaps especially in the absence of law) there are beneficial network externalities that arise from a common sense of ownership. When the nexus between a thing and a person becomes strong enough, we feel that the person is the owner.⁵⁰ If a Bourgeois strategy is part of our evolved psychological makeup, the

47. See generally STEVEN PINKER, *THE LANGUAGE INSTINCT: HOW THE MIND CREATES LANGUAGE* (1994).

48. Giacomo Rizzolatti et al., *Premotor Cortex and the Recognition of Motor Actions*, 3 *COGNITIVE BRAIN RES.* 131, 134-36 (1996).

49. *Id.*

50. If this is true, it would seem that the view that property is a relationship between persons has less support than the older view that property is a relationship between a person and a thing. Some Property professors get a bit mystical when discussing the idea of property. I think we are better off defining the word to mean judicially enforceable rights in things and then moving on to more important issues.

necessarily underlying shared sense of when to be assertive and when to be deferential is an innate sense of possession, and that sense could be embodied in the common law. Because possession is, in turn, the foundation of our law of property,⁵¹ a large part of our property law could be built upon distinctions embedded in the structure of our brains.

Much of our knowledge about mirror neurons and similar structures in the brain is quite recent, and there is obviously a huge amount still to learn. Because this scientific knowledge is new, we cannot expect it to have had much impact on the development of the law. Jones says it is a paradox that behavior arises from the functional design of the brain but we in law have historically not exhibited interest in brain design.⁵² The youth of our knowledge explains the paradox. There has in the past been little science that could make a useful connection between brain structure and behavior. Now that the connections are being made, we can expect the law, gradually, to make use of that knowledge.

C. *Challenging Our Traditional Normative Justifications for Law*

One of the scarier potential consequences of understanding human behavior is that it may make it harder for us to place moral blame on persons behaving harmfully. We do not generally assign moral responsibility for predetermined actions. Behavioral biology has the troubling potential to place many actions that now appear intentional into the predetermined category. Suppose, for example, that evolutionary theory predicts that males will become enraged when they see their mates naked in the arms of another male. And suppose that science confirms that nearly all males in such situations inevitably would shoot the intruder if a gun were available. If we decide, for whatever reason, that it should be perfectly legal and moral for people to keep guns handy in their bedrooms, it becomes difficult to place moral blame on a person for reacting as nearly all persons of his sex inevitably would react in his position. The fact that behavioral biology has undermined one rationale for punishment, does not, of course, mean that we cannot punish the killer. The behavioral facts assumed above do not eliminate all bases for punishment.⁵³ But those facts,

51. See Carol Rose, *Possession as the Origin of Property*, 52 U. CHI. L. REV. 73, 74 (1985); Richard Epstein, *Possession as the Root of Title*, 13 GA. L. REV. 1221, 1221-22 (1979).

52. See Jones, *supra* note 3, at 833.

53. Deterrence remains a rationale for punishment if some men might not respond automatically, i.e., some have exceptional power of self control, and we cannot distinguish those few from those who do respond automatically. To deter them, we need to apply the penalty to all even though some could not help their actions. Another utilitarian rationale for punishment is aspirational. Even if it had no deterrence, we might want to punish for symbolic reasons. It is a way of reaffirming the high value we place on life. Yet another rationale for punishing is to define who belongs to our community. We may wish to define ourselves as people who are not killers, even if

were they established, would, at least for some people, undermine moral retribution as a ground for punishment.⁵⁴

D. *Predicting Costs and Benefits of Legal Rules*

It is not hard to see the potential of behavioral science to improve our prediction of the costs and benefits of legal rules. To continue this cuckoldry example, science might also tell us that increasing the sentence from one year to ten years would reduce the number of shootings from 52 to 50 in a given period. The total amount of jail time for this crime would thus increase from 52 to 500 years.⁵⁵ Would we wish to suffer that loss of utility in order to save the lives of two people? Behavioral science cannot make that choice for us, but it can clarify the options.

E. *The Law of Law's Leverage*

This general topic, human responsiveness to changes in legal disincentives, is the core of another of Jones's discoveries, what he calls the law of law's leverage, or LLL.⁵⁶ As I understand it, LLL says that the difficulty of discouraging a behavior varies with the adaptivity of a predisposition to that behavior in past environments. Behaviors range continuously on a scale from maladaptive through non-adaptive to adaptive, and the further they are toward the adaptive end of the scale, the harder we must work to reduce their frequency.⁵⁷ I find this to be a very interesting concept, and it is easy to imagine that it will deepen our understanding of law's form and function.

I would, however, like to make explicit three points that Jones surely assumes. First, context matters. It could have been the case that even in the

that is not true. Incapacitation might also work as a justification in some such situations, so long as there is a basis for differentiating the risk posed by some men, even though response is automatic.

54. As the French might say, "Tout comprendre c'est tout pardonner." On the theory of retributivism, see generally Joseph L. Hoffmann, *On the Perils of Line Drawing: Juveniles and the Death Penalty*, 40 HASTINGS L. J. 229 (1989) (explaining different aspects of retributivism).

55. I recall that Warren Schwartz made this point in his 1980 Criminal Law course at Georgetown University Law Center. He described this trade-off as being a point about "infra marginal" effects. When we think about raising the penalty for certain behavior, we need to consider the effect on all of the "infra-marginal" people who are not deterred by the law as well as those at the margin who are deterred.

56. Jones, *supra* note 3, at 840-42.

57. *Id.* at 866. Jones says that divorce rates are less sensitive to divorce laws than we commonly think. It should be mentioned that there are scholars that have found that legal rules do affect divorce rates. See, e.g., Margaret F. Brinig & F.H. Buckley, *No-Fault Laws and At-Fault People*, 18 INTL. REV. OF L. & ECON. 325, 339 (1998) (arguing that divorce rates increase with no-fault laws); Leora Friedberg, *Did Unilateral Divorce Raise Divorce Rates?: Evidence from Panel Data*, 88 AM. ECON. REV. 608 (1988).

environment of evolutionary adaptation (EEA),⁵⁸ rape was adaptive in some circumstances and maladaptive in others. Attempting to rape a woman in the presence of her mate holding a club would have been maladaptive, a behavior not on average helpful in getting the rapist's genes passed to the next generation and more likely resulting in death. On the other hand, raping a woman after the rapist's tribe has just killed all the males in the victim's tribe is much more likely to be adaptive. The law of law's leverage suggests that rape in the latter context will be much harder to discourage than in the former.⁵⁹ If that is the case, we might want to raise the punishment for rape in circumstances in which the perpetrator is less likely to be caught. When, as is likely in this example, it is possible for the brain to be programmed to discriminate between various contexts, the law of law's leverage should be viewed as applying to the behavior separately in each of those possible contexts.

Second, some behaviors had no occasion to occur in the environment of evolutionary adaptation. Take, for example, driving on the left side of a solid yellow line. The type of intergenerational giving prohibited by the rule against perpetuities is also an example of behavior that was not common in the EEA. Such behaviors cannot be called adaptive or maladaptive in the environment of evolutionary adaptation because the behavior never happened in the EEA. Hence, we should consider it to be non-adaptive, neither adaptive nor maladaptive, on the ground that the EEA had no opportunity to select in favor or against brain modules triggering such behavior.

As we can see on further reflection, any behavior (including its context) that existed both in the EEA and today has been subjected to environmental selection forces for a long time. As a result, it is likely that such behaviors are adaptive at least to some degree and we will have some preference for them. On the other hand, behaviors that did not occur in the EEA will be less resistant to change. But the LLL is not simply a rule that older behaviors will be harder to change. Among old behaviors there may be large differences in degree of adaptivity. Running from a snake may be a stronger preference than engaging in sex, which may be a stronger preference than wrestling with a sibling. For that reason, Jones's LLL

58. Although there is much argument about how much humans are evolving by natural selection today, there is little disagreement that much of our special genetic nature was formed during the long period of human evolution prior to the emergence of civilization. The environment of evolutionary adaption, or EEA, refers to the environment that existed when a particular trait evolved.

59. There are, of course, at least two possibilities regarding a proclivity to rape. One is that the proclivity is not sensitive to context. If not, it could continue as a behavioral pattern as long as it carries a genetic advantage on average. It is also possible, as suggested here, for the proclivity to become highly sensitive to context, a preference that is felt only in very special circumstances.

would say that it is harder to change the frequency of running from snakes than it is to change the frequency of sibling wrestling, even though both behaviors have been around for time immemorial.

Third, it is important in all of this not to commit the naturalistic fallacy, not to confuse “is” with “ought.”⁶⁰ Jones raises the example of crimes of passion being treated differently from premeditated crimes.⁶¹ He says that emotional crimes are less easily controlled. Although this may start to explain why we make a distinction, it does not take us all the way to a justification for it. So what if crimes of passion arise out of biologically programmed emotions? Should those crimes draw greater sentences because they are harder to deter or lesser sentences because it is understandable that the person behaved that way? If our normative position is that we want to get the most deterrence for the least cost, we get the most bang for our buck by punishing premeditated crimes. But if our normative position is that we want to deter as many crimes of passion as we deter crimes of premeditation, we need to heighten punishment for crimes of passion. Whether the price in added jail time is justified by the increased deterrence is something behavioral biology cannot answer. Although biology can help predict the comparative costs of different rules, it cannot make the choice between the rules. Once again, the evolutionary analysis does not answer the normative questions, but it can elucidate the trade-offs.

III. CONCLUSION

Some of my comments may fail to address directly Jones’s main enterprise, linking behavioral biology to law at a theoretical level, developing proprioceptive sense of law.⁶² That is due in part to the fact that I applaud his initiative. It ought to be a fruitful avenue of research, and Jones has provided a nice look at some of the ways in which behavioral biology may provide insights into the form of law. His efforts to paint a picture of laws taking only a few of the many potential forms and his idea that design space is vast while actual design is a very small and finite subset of that space⁶³ are especially welcome. We do need greater understanding of what law is and what it could be (but is not), and Jones has taken a bold step in that search.

60. Jones is, of course, keen to this distinction. *See* Jones, *supra* note 3, at 870-72.

61. *Id.* at 862.

62. *Id.* at 835.

63. For more on the idea of design space, see generally DANIEL C. DENNETT, *DARWIN’S DANGEROUS IDEA: EVOLUTION AND THE MEANINGS OF LIFE* 124-35 (1996) (describing the design space for biological organisms).

Those at the vanguard of a new interdisciplinary approach to law take so much flak from scholars with established perspectives that it would be hard for them, the pioneers, to continue if they did not have inflated aspirations for the potential in their new perspective. At times Jones, though a very careful scholar, appears to claim too much. A better science of human behavior might lead to better law, but we ought not be too confident about that. On the other hand, I would make some claims for the evolutionary science of memetics that Jones shies away from. The future will tell whether either or both of us are too optimistic. One prediction I will make with confidence, however, is that evolutionary analysis of law will make for some interesting and enlightening reading. Imagine law and behavioral biology, it's easy if you try.